Package 'rbtc'

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Title Bitcoin API

Version 0.1-5

Description Implementation of the RPC-JSON API for Bitcoin and utility functions for address creation and content analysis of the blockchain.

Depends R (>= 3.4.0)

License GPL-3

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NeedsCompilation no

Author Bernhard Pfaff [aut, cre]

Maintainer Bernhard Pfaff <bernhard@pfaffikus.de>

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R topics documented:

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addnode *RPC-JSON API: addnode*

Description

Attempts to add or remove a node from the addnode list. Or try a connection to a node once.

Usage

```
addnode(con, node, command = c("add", "remove", "onetry"))
```

Arguments

con	object of class CONRPC.
node	character the node (see getpeerinfo() for nodes).
command	character 'add' to add a node to the list, 'remove' to remove a node from the list, 'onetry' to try a connection to the node once.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#addnode, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: clearbanned, disconnectnode, getaddednodeinfo, getconnectioncount, getnettotals, getnetworkinfo, getpeerinfo, listbanned, ping, setnetworkactive

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ANSRPC-class *The ANSRPC class*

Description

This class definition is employed to cast the JSON-objects returned by API-calls to bitcoind.

Slots

rpcname character the name of the API.

result ANY the output/result of the API.

ecode NullOrInteger the error code, in case of no error NULL.

emessage NullOrIntegerCharacter the error message, in case of no error NULL.

id character identifier to API-call.

See Also

Other bitcoind functions: CONRPC-class, NullOrCharacter-class, NullOrInteger-class, conrpc, rpcpost, startbtc, stopbtc

base58CheckDecode *Base 58 binary-to-text-decoding*

Description

This is a modified binary-to-text decoding used for decoding Bitcoin addresses, aka *Base58Check*. If this is applied to a WIF address and the first and last four bytes are dropped, the result is the corresponding private key.

Usage

```
base58CheckDecode(x)
```

Arguments

x	character, string in hex format.

Value

list, the decoded elements of the string.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Wallet_import_format,
https://en.bitcoin.it/wiki/Address,
https://en.bitcoin.it/wiki/Base58Check_encoding

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

base58CheckEncode *Base 58 binary-to-text-encoding*

Description

This is a modified binary-to-text encoding used for encoding Bitcoin addresses, aka *Base58Check*. If this is applied to an extended private key with its trailing check sum, then the result is the *Wallet Import Format*, (WIF).

Usage

```
base58CheckEncode(x)
```

Arguments

x	character, string in hex format.

Value

character, the encoded string.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Wallet_import_format,
https://en.bitcoin.it/wiki/Address,
https://en.bitcoin.it/wiki/Base58Check_encoding

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

bkfee *Compute fee in a block*

Description

This function returns the fee of the coinbase transaction. Hereby, the mining reward has been deducted. Initially, the mining reward was 50 BTC and is halved every 210,000 blocks.

Usage

```
bkfee(con, height)
```

Arguments

con	CONRPC, configuration object.
height	integer, the height of the block.

Value

numeric

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, intRangePeriod, timeofblock, txfee, txids, txinids, txstats, utxoage, utxotype, utxovalue

blockattime *Block height at time*

Description

This function returns the block heights closest to a provided date/time (time zone is GMT).

Usage

```
blockattime(con, targetdate)
```

Arguments

con	CONRPC, configuration object.
targetdate	POSIXct, the date/time of closest block heights.

Value

`data.frame`: the heights, the times and the time differences (in minutes) to the provided date/time.

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: `bkfee`, `blockstats`, `date2int`, `int2date`, `intMaxDay`, `intMinDay`, `intRangeDay`, `intRangePeriod`, `timeofblock`, `txfee`, `txids`, `txinids`, `txstats`, `utxoage`, `utxotype`, `utxovalue`

`blockstats` *Obtaining statistics of a block*

Description

This function returns key statistics of a block's content, such as the time, the count of transactions, and summary statistics of the UTXOs.

Usage

```
blockstats(con, height, excoinbase = TRUE)
```

Arguments

`con`	`CONRPC`, configuration object.
`height`	`integer`, the block's height.
`excoinbase`	`logical`, whether coinbase transaction should be excluded (default is `TRUE`).

Value

An object of class `data.frame`

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: `bkfee`, `blockattime`, `date2int`, `int2date`, `intMaxDay`, `intMinDay`, `intRangeDay`, `intRangePeriod`, `timeofblock`, `txfee`, `txids`, `txinids`, `txstats`, `utxoage`, `utxotype`, `utxovalue`

BTCADR-class *S4 class BTCADR*

Description

S4-class for BTC addresses, ordinarily created by a call to `createBtcAdr()`.

Slots

`privkey character`, the private key.

`wif character`, the WIF.

`pubkey character`, the 512-bit public key.

`pubhash character`, the hashed public key.

`btcadr character`, the BTC address.

`mainnet logical`, whether mainnet or testnet.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: `PrivKey2PubKey`, `PrivKey2Wif`, `PubHash2BtcAdr`, `PubKey2PubHash`, `Wif2PrivKey`, `base58CheckDecode`, `base58CheckEncode`, `concatHex`, `createBtcAdr`, `createPrivateKey`, `decodeHex`, `hash160`, `hash256`, `validBtcAdr`

clearbanned *RPC-JSON API: clearbanned*

Description

Clear all banned IPs.

Usage

```
clearbanned(con)
```

Arguments

`con`	object of class `CONRPC`.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#clearbanned, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, disconnectnode, getaddednodeinfo, getconnectioncount, getnettotals, getnetworkinfo, getpeerinfo, listbanned, ping, setnetworkactive

---

concatHex *Concatenate two hex strings*

Description

This function concatenates two hex strings, provided without the 0x prefix, and returns a list object of the associated integers.

Usage

```
concatHex(hex1, hex2)
```

Arguments

hex1	character, a hex string.
hex2	character, a hex string.

Value

list

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Wallet_import_format,
https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

Examples

```
h1 <- "80"
h2 <- createPrivateKey()
concatHex(h1, h2)
```

---

conrpc *Extracting Configuration Settings*

Description

This function extracts information from the configuration file `bitcoin.conf` with respect to the options `rpcuser` and `rpcpassword`.

Usage

```
conrpc(conf.file)
```

Arguments

`conf.file`	`character`, the fully qualified path.

Value

An S4-object of class `CONRPC`.

Author(s)

Bernhard Pfaff

See Also

Other bitcoind functions: ANSRPC-class, CONRPC-class, NullOrCharacter-class, NullOrInteger-class, rpcpost, startbtc, stopbtc

CONRPC-class *The CONRPC class*

Description

S4-class for curl connections to RPC-JSON.

Details

The slots rpcuse and rpcpwd are required in the call to curl. Furthermore, the fully qualified path to bitcoin.conf (slot config) is required for starting and stopping bitcoind as daemon.

See Also

Other bitcoind functions: ANSRPC-class, NullOrCharacter-class, NullOrInteger-class, conrpc, rpcpost, startbtc, stopbtc

containsPoint *containsPoint-methods*

Description

Checks whether a point is on a defined ellipctic curve.

Usage

```
containsPoint(curve, x, y)

## S4 method for signature 'ECPARAM,bigz,bigz'
containsPoint(curve, x, y)

## S4 method for signature 'ECPARAM,integer,integer'
containsPoint(curve, x, y)

## S4 method for signature 'ECPARAM,character,character'
containsPoint(curve, x, y)
```

Arguments

curve	an S4-object of class ECPARAM.
x	an S4-object of class bigz, the x-coordinate.
y	an S4-object of class bigz, the y-coordinate.

Value

logical

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Secp256k1

See Also

Other EllipticCurve: ECPARAM-class, ECPOINT-class, EcparamOrNull-class, ecoperators, ecparam, ecpoint, isNull

Examples

```
p <- "0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFEFFFFFC2F"
b <- "0x0000000000000000000000000000000000000000000000000000000000000007"
a <- "0x0000000000000000000000000000000000000000000000000000000000000000"
curve256 <- ecparam(p, a, b)
Gx <- "0x79BE667EF9DCBBAC55A06295CE870B07029BFCDB2DCE28D959F2815B16F81798"
Gy <- "0x483ada7726a3c4655da4fbfc0e1108a8fd17b448a68554199c47d08ffb10d4b8"
containsPoint(curve256, Gx, Gy)
```

---

createBtcAdr *Create BTC addresses*

Description

This function creates an object of S4-class BTCADR.

Usage

```
createBtcAdr(privkey, mainnet = TRUE)
```

Arguments

privkey	character, a private key.
mainnet	logical, for which net the keys should belong to.

Value

Object of S4-class BTCADR

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

---

createPrivateKey *Creation of a private key*

Description

Returns a random 256-bit private key in hex notation.

Usage

```
createPrivateKey()
```

Value

character.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Wallet_import_format,
https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, decodeHex, hash160, hash256, validBtcAdr

Examples

```
createPrivateKey()
```

date2int *Convert date/time to integer*

Description

This function returns the associated `integer` time for a given date/time object (coercible as `POSIXct` object.

Usage

```
date2int(x)
```

Arguments

`x`	`POSIXct`, date/time object.

Value

`integer`

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: `bkfee`, `blockattime`, `blockstats`, `int2date`, `intMaxDay`, `intMinDay`, `intRangeDay`, `intRangePeriod`, `timeofblock`, `txfee`, `txids`, `txinids`, `txstats`, `utxoage`, `utxotype`, `utxovalue`

Examples

```
d <- "2017-03-15"
date2int(d)
```

decodeHex *Decoding of a hex string*

Description

This function converts a hex string,, whereby the string must not contain the `0x` prefix, to a `list` object with the associated integers as its elements.

Usage

```
decodeHex(s)
```

Arguments

s	character, the hex string.

Value

list

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Wallet_import_format,
https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, hash160, hash256, validBtcAdr

Examples

```
pk <- createPrivateKey()
decodeHex(pk)
```

---

decoderawtransaction *RPC-JSON API: decoderawtransaction*

Description

Return a JSON object representing the serialized, hex-encoded transaction.

Usage

```
decoderawtransaction(con, hexstring)
```

Arguments

con	object of class CONRPC.
hexstring	character, the transaction hex string.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getblock, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other RawTransactions RPCs: getrawtransaction

---

decodescript *RPC-JSON API: decodescript*

Description

The decodescript RPC decodes a hex-encoded P2SH redeem script.

Usage

```
decodescript(con, redeem)
```

Arguments

con	object of class CONRPC.
redeem	character, the P2SH.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#decodescript, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

disconnectnode *RPC-JSON API: disconnectnode*

Description

Immediately disconnects from the specified peer node. Strictly one out of address and nodeid can be provided to identify the node.

Usage

```
disconnectnode(con, address = NULL, nodeid = NULL)
```

Arguments

con	object of class CONRPC.
address	character the IP address/port of the node.
nodeid	character The node ID (see getpeerinfo() for node IDs).

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#disconnectnode, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, clearbanned, getaddednodeinfo, getconnectioncount, getnettotals, getnetworkinfo, getpeerinfo, listbanned, ping, setnetworkactive

ecoperators *Elliptic curve operators*

Description

The following operarations for EC points are available:

- doubleUpmultiplying a point by itself
- +point addition
- leftmostBithighest bit value of an integer
- ANDlogical and-operator for two integers
- *multiplication of an integer scalar with an EC point

Usage

```
doubleUp(ecp)

## S4 method for signature 'ECPOINT'
doubleUp(ecp)

## S4 method for signature 'ECPOINT,ECPOINT'
e1 + e2

leftmostBit(x)

## S4 method for signature 'bigz'
leftmostBit(x)

AND(x, y)

## S4 method for signature 'bigz,bigz'
AND(x, y)

## S4 method for signature 'ECPOINT,bigz'
e1 * e2

## S4 method for signature 'bigz,ECPOINT'
e1 * e2
```

Arguments

ecp	point on elliptic curve
e1	point on elliptic curve, or integer
e2	point on elliptic curve, or integer
x	integer
y	integer

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Secp256k1

See Also

Other EllipticCurve: ECPARAM-class, ECPOINT-class, EcparamOrNull-class, containsPoint, ecparam, ecpoint, isNull

---

ecparam *Creating objects of class ECPARAM*

Description

This function returns an object of S4-class ECPARAM, that does contain the parametrization of an elliptic curve.

Usage

```
ecparam(p, a, b)
```

Arguments

p	integer
a	integer
b	integer

Value

An object of S4-class ECPARAM

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Secp256k1

See Also

Other EllipticCurve: ECPARAM-class, ECPOINT-class, EcparamOrNull-class, containsPoint, ecoperators, ecpoint, isNull

Examples

```
p <- "0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFEFFFFFC2F"
b <- "0x0000000000000000000000000000000000000000000000000000000000000007"
a <- "0x0000000000000000000000000000000000000000000000000000000000000000"
curve256 <- ecparam(p, a, b)
curve256
```

ECPARAM-class *The ECPARAM class*

Description

S4-class for elliptic curve parameters. Objects of this class do contain the big integer parameters of elliptic curves. Instances of this class are ordinarily created by a call to `exparam`

Slots

`p` `bigz`, curve dimension.

`a` `bigz`, parameter.

`b` `bigz`, parameter.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Secp256k1

See Also

Other EllipticCurve: `ECPOINT-class`, `EcparamOrNull-class`, `containsPoint`, `ecoperators`, `ecparam`, `ecpoint`, `isNull`

EcparamOrNull-class *S4 Class Union ECPARAM or NULL*

Description

S4-class union of `NULL` or `ECPARAM`.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Secp256k1

See Also

Other EllipticCurve: ECPARAM-class, ECPOINT-class, containsPoint, ecoperators, ecparam, ecpoint, isNull

---

ecpoint *Creating objects of class ECPOINT*

Description

This function returns an object of S4-class ECPOINT, that does represent a point on an elliptic curve.

Usage

```
ecpoint(ecparam = NULL, x, y, r = NULL)
```

Arguments

ecparam	integerECPARAM
x	x-coordinate, to be coercible to bigz.
y	y-coordinate, to be coercible to bigz.
r	the order of the base point.

Value

An object of S4-class ECPOINT

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Secp256k1

See Also

Other EllipticCurve: ECPARAM-class, ECPOINT-class, EcparamOrNull-class, containsPoint, ecoperators, ecparam, isNull

Examples

```
p <- "0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFEFFFFFC2F"
b <- "0x0000000000000000000000000000000000000000000000000000000000000007"
a <- "0x0000000000000000000000000000000000000000000000000000000000000000"
r <- "0xFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFEBAAEDCE6AF48A03BBFD25E8CD0364141"
x <- "0x79BE667EF9DCBBAC55A06295CE870B07029BFCDB2DCE28D959F2815B16F81798"
y <- "0x483ada7726a3c4655da4fbfc0e1108a8fd17b448a68554199c47d08ffb10d4b8"
curve256 <- ecparam(p, a, b)
ecp <- ecpoint(curve256, x, y, r)
ecp
```

`ECPOINT-class` *S4 Class ECPOINT*

Description

S4-class for a point on an elliptic curve. Ordinarily, objects are created by calling `ecpoint`.

Slots

`ecparam ECPARAM`

`x bigz`

`y bigz`

`r bigz`

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Secp256k1

See Also

Other EllipticCurve: `ECPARAM-class`, `EcparamOrNull-class`, `containsPoint`, `ecoperators`, `ecparam`, `ecpoint`, `isNull`

`getaddednodeinfo` *RPC-JSON API: getaddednodeinfo*

Description

Returns information about the given added node, or all added nodes (note that onetry addnodes are not listed here)

Usage

```
getaddednodeinfo(con, node = NULL)
```

Arguments

`con`	object of class `CONRPC`.
`node`	`character` the node (see `getpeerinfo()` for nodes).

Value

A S4-object of class `ANSRPC`.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getaddednodeinfo, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: `addnode`, `clearbanned`, `disconnectnode`, `getconnectioncount`, `getnettotals`, `getnetworkinfo`, `getpeerinfo`, `listbanned`, `ping`, `setnetworkactive`

`getbestblockhash` *RPC-JSON API: getbestblockhash*

Description

Returns the hash of the best (tip) block in the longest blockchain.

Usage

```
getbestblockhash(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getbestblockhash, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

---

getblock *RPC-JSON API: getblock*

Description

Returns information of a block hash. The returned level of details depends on the argument verbosity.

Usage

```
getblock(con, blockhash, verbosity = c("l1", "l0", "l2"))
```

Arguments

con	object of class CONRPC.
blockhash	character, the block hash.
verbosity	character, level of returned details.

Value

A S4-object of class ANSRPC.

Details If verbosity is 'l0', returns a string that is serialized, hex-encoded data for block 'hash'. If verbosity is 'l1' (the default), returns an object with information about block <hash>. If verbosity is 'l2', returns an object with information about block <hash> and information about each transaction.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getblock, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

---

getblockchaininfo *RPC-JSON API: getblockchaininfo*

Description

Returns an object containing various state info regarding blockchain processing.

Usage

```
getblockchaininfo(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getblockchaininfo, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

getblockcount *RPC-JSON API: getblockcount*

Description

Returns the number of blocks in the longest blockchain.

Usage

```
getblockcount(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getblockcount, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

---

getblockhash *RPC-JSON API: getblockhash*

Description

Returns hash of block in best-block-chain at height provided.

Usage

```
getblockhash(con, height)
```

Arguments

con	object of class CONRPC.
height	integer the height index.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getblockhash, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

---

getblockheader *RPC-JSON API: getblockheader*

Description

Returns the block header for a given hash string.

Usage

```
getblockheader(con, hash, verbose = TRUE)
```

Arguments

con	object of class CONRPC.
hash	character the block hash.
verbose	logical TRUE for a json object, FALSE for the hex encoded data.

Value

A S4-object of class ANSRPC.

Details

If verbose is false, returns a string that is serialized, hex-encoded data for blockheader 'hash'. If verbose is true, returns an Object with information about blockheader <hash>.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getblockheader, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

---

`getchaintips` *RPC-JSON API: getchaintips*

Description

Return information about all known tips in the block tree, including the main chain as well as orphaned branches.

Usage

```
getchaintips(con)
```

Arguments

`con`	object of class `CONRPC`.

Value

A S4-object of class `ANSRPC`.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getchaintips, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

---

`getchaintxstats` *RPC-JSON API: getchaintxstats*

Description

Compute statistics about the total number and rate of transactions in the chain.

Usage

```
getchaintxstats(con, nblocks = NULL, blockhash = NULL)
```

Arguments

`con`	object of class `CONRPC`.
`nblocks`	`integer` optional, size of the window in number of blocks (default: one month).
`blockhash`	`character` optional, the hash of the block that ends the window.

Value

A S4-object of class `ANSRPC`.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getchaintxstats, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

getconnectioncount *RPC-JSON API: getconnectioncount*

Description

Returns the number of connections to other nodes.

Usage

```
getconnectioncount(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getconnectioncount, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, clearbanned, disconnectnode, getaddednodeinfo, getnettotals, getnetworkinfo, getpeerinfo, listbanned, ping, setnetworkactive

getdifficulty *RPC-JSON API: getdifficulty*

Description

Returns the proof-of-work difficulty as a multiple of the minimum difficulty.

Usage

```
getdifficulty(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getdifficulty, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

---

gethelp *RPC-JSON API: Help*

Description

Returning information about RPC functions.

Usage

```
gethelp(con, rpc = "")
```

Arguments

con	object of class CONRPC.
rpc	character, name of RPC function.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#help, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Control RPCs: getinfo, getwalletinfo

---

getinfo *RPC-JSON API: getinfo*

Description

Returning information about bitcoin configuration and settings.

Usage

```
getinfo(con)
```

Arguments

con	object of class CONRPC.

Details

WARNING: getinfo is deprecated and will be fully removed in 0.16. Projects should transition to using getblockchaininfo, getnetworkinfo, and getwalletinfo before upgrading to 0.16.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getinfo, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Control RPCs: gethelp, getwalletinfo

`getmempoolancestors` *RPC-JSON API: getmempoolancestors*

Description

If txid is in the mempool, returns all in-mempool ancestors.

Usage

```
getmempoolancestors(con, txid, verbose = FALSE)
```

Arguments

`con`	object of class `CONRPC`.
`txid`	`character`, the transaction id (must be in mempool).
`verbose`	`logical`, `TrueTRUE` for a json object, `FALSE` for array of transaction ids (default).

Value

A S4-object of class `ANSRPC`.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getmempoolancestors, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: `decodescript`, `getbestblockhash`, `getblockchaininfo`, `getblockcount`, `getblockhash`, `getblockheader`, `getblock`, `getchaintips`, `getchaintxstats`, `getdifficulty`, `getmempooldescendants`, `getmempoolentry`, `getmempoolinfo`, `getrawmempool`, `gettxoutproof`, `gettxoutsetinfo`, `gettxout`, `preciousblock`, `pruneblockchain`, `verifychain`, `verifytxoutproof`

`getmempooldescendants` *RPC-JSON API: getmempooldescendants*

Description

If txid is in the mempool, returns all in-mempool descendants.

Usage

```
getmempooldescendants(con, txid, verbose = FALSE)
```

Arguments

`con`	object of class `CONRPC`.
`txid`	`character`, the transaction id (must be in mempool).
`verbose`	`logical`, `TrueTRUE` for a json object, `FALSE` for array of transaction ids (default).

Value

A S4-object of class `ANSRPC`.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getmempooldescendants, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: `decodescript`, `getbestblockhash`, `getblockchaininfo`, `getblockcount`, `getblockhash`, `getblockheader`, `getblock`, `getchaintips`, `getchaintxstats`, `getdifficulty`, `getmempoolancestors`, `getmempoolentry`, `getmempoolinfo`, `getrawmempool`, `gettxoutproof`, `gettxoutsetinfo`, `gettxout`, `preciousblock`, `pruneblockchain`, `verifychain`, `verifytxoutproof`

`getmempoolentry` *RPC-JSON API: getmempoolentry*

Description

Returns mempool data for given transaction.

Usage

```
getmempoolentry(con, txid)
```

Arguments

`con`	object of class `CONRPC`.
`txid`	`character`, the transaction id (must be in mempool).

Value

A S4-object of class `ANSRPC`.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getmempoolentry, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: `decodescript`, `getbestblockhash`, `getblockchaininfo`, `getblockcount`, `getblockhash`, `getblockheader`, `getblock`, `getchaintips`, `getchaintxstats`, `getdifficulty`, `getmempoolancestors`, `getmempooldescendants`, `getmempoolinfo`, `getrawmempool`, `gettxoutproof`, `gettxoutsetinfo`, `gettxout`, `preciousblock`, `pruneblockchain`, `verifychain`, `verifytxoutproof`

getmempoolinfo *RPC-JSON API: getmempoolinfo*

Description

Returns details on the active state of the TX memory pool.

Usage

```
getmempoolinfo(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getmempoolinfo, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

getnettotals *RPC-JSON API: getnettotals*

Description

Returns information about network traffic, including bytes in, bytes out, and current time.

Usage

```
getnettotals(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getnettotals, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, clearbanned, disconnectnode, getaddednodeinfo, getconnectioncount, getnetworkinfo, getpeerinfo, listbanned, ping, setnetworkactive

---

getnetworkinfo *RPC-JSON API: getnetworkinfo*

Description

Returns an object containing various state info regarding P2P networking.

Usage

```
getnetworkinfo(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getnetworkinfo, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, clearbanned, disconnectnode, getaddednodeinfo, getconnectioncount, getnettotals, getpeerinfo, listbanned, ping, setnetworkactive

---

`getpeerinfo` *RPC-JSON API: getpeerinfo*

Description

Returns data about each connected network node as a json array of objects.

Usage

```
getpeerinfo(con)
```

Arguments

`con`	object of class `CONRPC`.

Value

A S4-object of class `ANSRPC`.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getpeerinfo, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, clearbanned, disconnectnode, getaddednodeinfo, getconnectioncount, getnettotals, getnetworkinfo, listbanned, ping, setnetworkactive

getrawmempool *RPC-JSON API: getrawmempool*

Description

Returns all transaction ids in memory pool as a json array of string transaction ids. Hint: use getmempoolentry to fetch a specific transaction from the mempool.

Usage

```
getrawmempool(con, verbose = TRUE)
```

Arguments

con	object of class CONRPC.
verbose	logical, TRUE for a json object, FALSE for array of transaction ids

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getrawmempool, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

getrawtransaction *RPC-JSON API: getrawtransaction*

Description

Returns the raw transaction data.

Usage

```
getrawtransaction(con, txid, verbose = FALSE)
```

Arguments

con	object of class CONRPC.
txid	character, the transaction id.
verbose	logical, type of output.

Value

A S4-object of class ANSRPC.

Details By default this function only works for mempool transactions. If the -txindex option is enabled, it also works for blockchain transactions. DEPRECATED: for now, it also works for transactions with unspent outputs. If verbose is 'true', returns an object with information about 'txid'. If verbose is 'false' or omitted, returns a string that is serialized, hex-encoded data for 'txid'.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getblock, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other RawTransactions RPCs: decoderawtransaction

gettxout *RPC-JSON API: gettxout*

Description

Returns details about an unspent transaction output.

Usage

```
gettxout(con, txid, n, incmempool = TRUE)
```

Arguments

con	object of class CONRPC.
txid	charcater the transaction id.
n	integer vout number.
incmempool	logical whether to include the mempool (default TRUE).

Details

Note that an unspent output that is spent in the mempool won't appear.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#gettxout, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, preciousblock, pruneblockchain, verifychain, verifytxoutproof

gettxoutproof *RPC-JSON API: gettxoutproof*

Description

Returns a hex-encoded proof that "txid" was included in a block.

Usage

```
gettxoutproof(con, txids, blockhash = NULL)
```

Arguments

con	object of class CONRPC.
txids	charcater a json array of txids to filter.
blockhash	integer looks for txid in the block with this hash, (optional, default NULL).

Details

NOTE: By default this function only works sometimes. This is when there is an unspent output in the utxo for this transaction. To make it always work, you need to maintain a transaction index, using the -txindex command line option or specify the block in which the transaction is included manually (by blockhash).

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#gettxoutproof, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

gettxoutsetinfo *RPC-JSON API: gettxoutsetinfo*

Description

Returns statistics about the unspent transaction output set. Note this call may take some time.

Usage

```
gettxoutsetinfo(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#gettxoutsetinfo, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxout, preciousblock, pruneblockchain, verifychain, verifytxoutproof

getwalletinfo *RPC-JSON API: getwalletinfo*

Description

Returning information about bitcoin wallet.

Usage

```
getwalletinfo(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#getwalletinfo, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Control RPCs: gethelp, getinfo

---

hash160 *BTC hash160*

Description

This function returns the hash by applying the sha256 hashing first and then to the resulting hash the ripemd160 algorithm.

Usage

```
hash160(d)
```

Arguments

d	raw, vector.

Value

character, the value of d hashed with sha256 and ripemd160.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash256, validBtcAdr

---

hash256 *BTC hash256*

Description

This function returns the hash by applying the sha256 hashing algorithm twice to a raw object.

Usage

```
hash256(d)
```

Arguments

d	raw, vector.

Value

character, the value of d hashed twice.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, validBtcAdr

`int2date` *Convert time stamp to POSIX*

Description

This function returns the associated `POSIXct` time to the time stamp integer in a block header.

Usage

```
int2date(x)
```

Arguments

`x`	`integer`, the block header time stamp

Value

An object of class `POSIXct, POSIXt`

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Block_timestamp

See Also

Other UtilityFuncs: `bkfee`, `blockattime`, `blockstats`, `date2int`, `intMaxDay`, `intMinDay`, `intRangeDay`, `intRangePeriod`, `timeofblock`, `txfee`, `txids`, `txinids`, `txstats`, `utxoage`, `utxotype`, `utxovalue`

Examples

```
ts <- 1532954868
int2date(ts)
```

intMaxDay *Integer representation of a day-end*

Description

This function returns the associated integer time for the end of a specific day (*i.e.*, 23:59:59 time).

Usage

```
intMaxDay(x)
```

Arguments

x	POSIXct, date/time object.

Value

integer

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMinDay, intRangeDay, intRangePeriod, timeofblock, txfee, txids, txinids, txstats, utxoage, utxotype, utxovalue

Examples

```
d1 <- "2017-03-15"
d1 <- intMaxDay(d1)
d2 <- "2017-03-15 23:59:59"
d2 <- intMaxDay(d2)
identical(d1,d2)
```

intMinDay *Integer representation of a day-begin*

Description

This function returns the associated integer time for the start of a specific day (*i.e.*, 00:00:00 time).

Usage

```
intMinDay(x)
```

Arguments

x	POSIXct, date/time object.

Value

integer

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intRangeDay, intRangePeriod, timeofblock, txfee, txids, txinids, txstats, utxoage, utxotype, utxovalue

Examples

```
d1 <- "2017-03-15"
d1 <- intMinDay(d1)
d2 <- "2017-03-15 00:00:00"
d2 <- intMinDay(d2)
identical(d1,d2)
```

---

intRangeDay *Integer range within a day*

Description

This function returns the associated integer times for the start and end of a specific day.

Usage

```
intRangeDay(x)
```

Arguments

x	POSIXct, date/time object.

Value

integer

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangePeriod, timeofblock, txfee, txids, txinids, txstats, utxoage, utxotype, utxovalue

Examples

```
d1 <- "2017-03-15"
intRangeDay(d1)
intMinDay(d1)
intMaxDay(d1)
```

---

intRangePeriod *Integer range between two dates*

Description

This function returns the associated integer times for the start of date d1 and the end of date d2.

Usage

```
intRangePeriod(d1, d2)
```

Arguments

d1	POSIXct, date/time object.
d2	POSIXct, date/time object.

Value

integer

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, timeofblock, txfee, txids, txinids, txstats, utxoage, utxotype, utxovalue

Examples

```
d1 <- "2017-03-15"
d2 <- "2017-04-15"
intRangePeriod(d1, d2)
intMinDay(d1)
intMaxDay(d2)
```

isNull *Test for empty EC point*

Description

Checks whether an EC point does exist.

Usage

```
isNull(x)

## S4 method for signature 'ECPOINT'
isNull(x)
```

Arguments

x	object

Value

logical

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Secp256k1

See Also

Other EllipticCurve: ECPARAM-class, ECPOINT-class, EcparamOrNull-class, containsPoint, ecoperators, ecparam, ecpoint

listbanned *RPC-JSON API: listbanned*

Description

List all banned IPs/Subnets.

Usage

```
listbanned(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#listbanned, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, clearbanned, disconnectnode, getaddednodeinfo, getconnectioncount, getnettotals, getnetworkinfo, getpeerinfo, ping, setnetworkactive

---

NullOrCharacter-class *S4 Class Union NULL or character*

Description

S4-class union of NULL or character.

See Also

Other bitcoind functions: ANSRPC-class, CONRPC-class, NullOrInteger-class, conrpc, rpcpost, startbtc, stopbtc

---

NullOrInteger-class *S4 Class Union NULL or integer*

Description

S4-class union of NULL or integer.

See Also

Other bitcoind functions: ANSRPC-class, CONRPC-class, NullOrCharacter-class, conrpc, rpcpost, startbtc, stopbtc

ping *RPC-JSON API: ping*

Description

Requests that a ping be sent to all other nodes, to measure ping time. Results provided in getpeerinfo, pingtime and pingwait fields are decimal seconds. Ping command is handled in queue with all other commands, so it measures processing backlog, not just network ping.

Usage

```
ping(con)
```

Arguments

con	object of class CONRPC.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#ping, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, clearbanned, disconnectnode, getaddednodeinfo, getconnectioncount, getnettotals, getnetworkinfo, getpeerinfo, listbanned, setnetworkactive

preciousblock *RPC-JSON API: preciousblock*

Description

Treats a block as if it were received before others with the same work. A can override the effect of an earlier one. The effects of preciousblock are not retained across restarts.

Usage

```
preciousblock(con, blockhash)
```

Arguments

con	object of class CONRPC.
blockhash	character, the hash of the block to mark as precious.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#preciousblock, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, pruneblockchain, verifychain, verifytxoutproof

---

PrivKey2PubKey *Create public key from private key*

Description

This function creates the 512-bit public key corresponding to a private key.

Usage

```
PrivKey2PubKey(privkey, mainnet = TRUE)
```

Arguments

privkey	character, the private key.
mainnet	logical, whether the WIF should correspond to the mainnet or testnet.

Value

character, the public key.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

---

PrivKey2Wif *Create WIF from a private key*

Description

Returns the corresponding WIF key from a private key

Usage

```
PrivKey2Wif(privkey, mainnet = TRUE)
```

Arguments

privkey	character, a private key.
mainnet	logical, whether the WIF should correspond to the mainnet or testnet.

Value

character, the WIF key

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Wallet_import_format,
https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

Examples

```
pk <- createPrivateKey()
PrivKey2Wif(pk)
```

`pruneblockchain` *RPC-JSON API: pruneblockchain*

Description

Pruning of blockchain.

Usage

```
pruneblockchain(con, height)
```

Arguments

`con`	object of class `CONRPC`.
`height`	`integer` The block height to prune up to.

Value

A S4-object of class `ANSRPC`.

Details

May be set to a discrete height, or a unix timestamp to prune blocks whose block time is at least 2 hours older than the provided timestamp.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#pruneblockchain, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: `decodescript`, `getbestblockhash`, `getblockchaininfo`, `getblockcount`, `getblockhash`, `getblockheader`, `getblock`, `getchaintips`, `getchaintxstats`, `getdifficulty`, `getmempoolancestors`, `getmempooldescendants`, `getmempoolentry`, `getmempoolinfo`, `getrawmempool`, `gettxoutproof`, `gettxoutsetinfo`, `gettxout`, `preciousblock`, `verifychain`, `verifytxoutproof`

PubHash2BtcAdr *Create BTC address from public key hash*

Description

This function returns the corresponding BTC address from a hashed public key.

Usage

```
PubHash2BtcAdr(pubhash)
```

Arguments

pubhash	character, the public key hash.

Value

character, the BTC address

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

PubKey2PubHash *Create public key hash from 512-bit public key*

Description

This function returns the associated public key hash from a 512-bit public key by using the hash160() function.

Usage

```
PubKey2PubHash(pubkey, mainnet = TRUE)
```

Arguments

pubkey	character, the public key.
mainnet	logical, whether the WIF should correspond to the mainnet or testnet.

Value

character, the hash of a public key

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

---

rpcpost *HTTP post of RPC-JSON*

Description

This function executes an RPC-JSON post.

Usage

```
rpcpost(con, api, plist = list())
```

Arguments

con	CONRPC object, returned from conrpc().
api	character the name of the RPC function.
plist	list a named list object of the parameters for api

Value

A list object, coerced JSON answer from RPC.

Author(s)

Bernhard Pfaff

See Also

Other bitcoind functions: ANSRPC-class, CONRPC-class, NullOrCharacter-class, NullOrInteger-class, conrpc, startbtc, stopbtc

---

setnetworkactive *RPC-JSON API: setnetworkactive*

Description

Disable/enable all p2p network activity.

Usage

```
setnetworkactive(con, state = TRUE)
```

Arguments

con	object of class CONRPC.
state	logical the network state.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#setnetworkactive, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Network RPCs: addnode, clearbanned, disconnectnode, getaddednodeinfo, getconnectioncount, getnettotals, getnetworkinfo, getpeerinfo, listbanned, ping

show *show-methods*

Description

Defined show-methods for S4-classes.

Usage

```
## S4 method for signature 'ANSRPC'
show(object)

## S4 method for signature 'BTCADR'
show(object)

## S4 method for signature 'ECPARAM'
show(object)
```

Arguments

object	a S4-class object.

startbtc *Start bitcoind server process*

Description

This function does start the bitcoind-server process. It should only be called when no suitable RPC-JSON process is running

Usage

```
startbtc(confbtc)
```

Arguments

confbtc	CONRPC object, returned from conrpc().

Details

The process is started by calling system(). Hereby, the options: rpcuser, rpcpassword and conf are used in the call to bitcoind.

Value

NULL

Author(s)

Bernhard Pfaff

See Also

Other bitcoind functions: ANSRPC-class, CONRPC-class, NullOrCharacter-class, NullOrInteger-class, conrpc, rpcpost, stopbtc

---

stopbtc *Stop bitcoind server process*

Description

This function stops a running bitcoind process. It calls `bitcoin-cli stop` *via* the R function `system()`.

Usage

```
stopbtc(confbtc)
```

Arguments

confbtc	CONRPC object, returned from conrpc().

Author(s)

Bernhard Pfaff

See Also

Other bitcoind functions: ANSRPC-class, CONRPC-class, NullOrCharacter-class, NullOrInteger-class, conrpc, rpcpost, startbtc

---

timeofblock *Time of a block*

Description

This function returns the time of a block in GMT.

Usage

```
timeofblock(con, height)
```

Arguments

con	CONRPC, configuration object.
height	integer, the height of the block.

Value

POSIXct

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, intRangePeriod, txfee, txids, txinids, txstats, utxoage, utxotype, utxovalue

---

txfee *Compute fee of a transaction*

Description

This function returns the implicit fee of a transaction, by computing the difference between the sum of its inputs and the sum of its outputs.

Usage

```
txfee(con, txid)
```

Arguments

con	CONRPC, configuration object.
txid	character, the id of the transaction.

Value

numeric

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, intRangePeriod, timeofblock, txids, txinids, txstats, utxoage, utxotype, utxovalue

txids *Retrieve TX Ids in block*

Description

This function retrieves the transaction IDs in a block.

Usage

```
txids(con, height, excoinbase = TRUE)
```

Arguments

con	CONRPC, configuration object.
height	integer, the block's height.
excoinbase	logical, whether coinbase transaction should be excluded (default is TRUE).

Value

character

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, intRangePeriod, timeofblock, txfee, txinids, txstats, utxoage, utxotype, utxovalue

txinids *Retrieving the input transaction IDs*

Description

This function returns the transaction IDs of the inputs for a given transaction.

Usage

```
txinids(con, txid)
```

Arguments

con	CONRPC, configuration object.
txid	character, the id of the transaction.

Value

data.frame, the transaction ID(s) and the position(s) of the previous UTXO(s).

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, intRangePeriod, timeofblock, txfee, txids, txstats, utxoage, utxotype, utxovalue

---

txstats *Statistics of a transaction*

Description

This function returns key statistics/characteristics of a transaction.

Usage

```
txstats(con, txid)
```

Arguments

con	CONRPC, configuration object.
txid	character, the id of the transaction.

Value

data.frame

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, intRangePeriod, timeofblock, txfee, txids, txinids, utxoage, utxotype, utxovalue

utxoage *Age of UTXOs*

Description

This function returns a `difftime` object measuring the elapsed time(s) between the UTXO(s) in a transaction and its input(s) (previous UTXO(s)).

Usage

```
utxoage(con, txid, units = c("auto", "secs", "mins", "hours", "days",
  "weeks"))
```

Arguments

`con`	`CONRPC`, configuration object.
`txid`	`character`, the id of the transaction.
`units`	`character`, the time difference units; passed to `difftime()`.

Value

`difftime`

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: `bkfee`, `blockattime`, `blockstats`, `date2int`, `int2date`, `intMaxDay`, `intMinDay`, `intRangeDay`, `intRangePeriod`, `timeofblock`, `txfee`, `txids`, `txinids`, `txstats`, `utxotype`, `utxovalue`

utxotype *Retrieving types of UTXOs*

Description

This function returns the types of the UTXO(s) in a transaction.

Usage

```
utxotype(con, txid)
```

Arguments

con	CONRPC, configuration object.
txid	character, the id of the transaction.

Value

character

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, intRangePeriod, timeofblock, txfee, txids, txinids, txstats, utxoage, utxovalue

---

utxovalue *Retrieving values of UTXOs*

Description

This function returns the values of UTXO(s) in a transaction.

Usage

```
utxovalue(con, txid)
```

Arguments

con	CONRPC, configuration object.
txid	character, the id of the transaction.

Value

numeric

Author(s)

Bernhard Pfaff

See Also

Other UtilityFuncs: bkfee, blockattime, blockstats, date2int, int2date, intMaxDay, intMinDay, intRangeDay, intRangePeriod, timeofblock, txfee, txids, txinids, txstats, utxoage, utxotype

validBtcAdr *Validate S4-class BTCADR*

Description

This function validates objects of S4-class BTCADR. Hereby, checks are conducted with respect to the first character of the addresses; their consistency with the net version and the correspondence of the checksums.

Usage

```
validBtcAdr(object)
```

Arguments

object	BTCADR object

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, Wif2PrivKey, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256

verifychain *RPC-JSON API: verifychain*

Description

Verifies blockchain database.

Usage

```
verifychain(con, checklevel = NULL, nblocks = NULL)
```

Arguments

con	object of class CONRPC.
checklevel	integer (optional, 0-4, default=3), how thorough the block verification is.a json array of txids to filter.
nblocks	integer (optional, default=6, 0=all), the number of blocks to check.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#verifychain, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifytxoutproof

---

verifytxoutproof *RPC-JSON API: verifytxoutproof*

Description

Verifies that a proof points to a transaction in a block, returning the transaction it commits to and throwing an RPC error if the block is not in our best chain.

Usage

```
verifytxoutproof(con, proof)
```

Arguments

con	object of class CONRPC.
proof	character the hex-encoded proof generated by gettxoutproof.

Value

A S4-object of class ANSRPC.

Author(s)

Bernhard Pfaff

References

https://bitcoin.org/en/developer-reference#verifytxoutproof, https://bitcoin.org/en/developer-reference#remote-procedure-calls-rpcs

See Also

Other Blockchain RPCs: decodescript, getbestblockhash, getblockchaininfo, getblockcount, getblockhash, getblockheader, getblock, getchaintips, getchaintxstats, getdifficulty, getmempoolancestors, getmempooldescendants, getmempoolentry, getmempoolinfo, getrawmempool, gettxoutproof, gettxoutsetinfo, gettxout, preciousblock, pruneblockchain, verifychain

---

Wif2PrivKey *Create private key from WIF*

Description

Returns the corresponding private key from a WIF key.

Usage

```
Wif2PrivKey(wif)
```

Arguments

wif	character, a WIF key.

Value

character, the corresponding private key.

Author(s)

Bernhard Pfaff

References

https://en.bitcoin.it/wiki/Wallet_import_format,
https://en.bitcoin.it/wiki/Address

See Also

Other BtcAdresses: BTCADR-class, PrivKey2PubKey, PrivKey2Wif, PubHash2BtcAdr, PubKey2PubHash, base58CheckDecode, base58CheckEncode, concatHex, createBtcAdr, createPrivateKey, decodeHex, hash160, hash256, validBtcAdr

Examples

```
pk1 <- createPrivateKey()
wif <- PrivKey2Wif(pk1)
pk2 <- Wif2PrivKey(wif)
identical(pk1, pk2)
```

Index