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## Modul:Unicode data/blocks/Doku

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**Dies ist die Dokumentationsseite für [Modul:Unicode data/blocks](#)**

Insert non-formatted text here Contains data on [Unicode blocks](#) for [Module:Unicode data](#) derived from [Blocks.txt](#) in the Unicode Character Database.

# Modul:Unicode data

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## Usage

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This module provides functions that access information on Unicode code points. The information is retrieved from data modules generated from the [Unicode Character Database](#), or derived by rules given in the [Unicode Specification](#). It and its submodules were copied from English Wiktionary and then modified; see [there](#) for more information.

## Functions

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### Vorlage:Code

Receives a code point (number) and returns its name or label; for example, [Vorlage:Code](#) returns [Vorlage:Code](#).

For example, [Vorlage:Tnull](#) → `<reserved-0061>`

### Vorlage:Code

Template-invokable functions that allow access to the functions starting with `lookup` and `is`. Replace the first underscore in the function name with a pipe. For most of the functions, add the code point in hexadecimal base as the next parameter, but for `is_Latin`, `is_rtl`, and `is_valid_pagename`, add text. [HTML character references](#) in the text are decoded by the module into code points.

For example, [Vorlage:Tnull](#) → **Lua-Fehler in Zeile 293: attempt to index local 'data\_module' (a boolean value).**

## Data modules

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The data used by functions in this module is found in [submodules](#). Some are generated by [AWK](#) scripts shown at [User:Kephir/Unicode](#) on English Wiktionary, others by Lua scripts on the `/make` subpages of the submodules.

- [Module:Unicode data/aliases](#): the formal name aliases for characters (from [NameAliases.txt](#))
- [Module:Unicode data/blocks](#): the list of Unicode blocks (from [Blocks.txt](#))
- [Module:Unicode data/category](#): data mapping characters to their General Category (from [DerivedGeneralCategory.txt](#))
- [Module:Unicode data/control](#): data for identifying characters that belong to the General Categories of Separator and Other (from [DerivedGeneralCategory.txt](#))



- [Module:Unicode data/combining](#): data mapping characters to their Combining Classes (from [DerivedCombiningClass.txt](#))
- [Module:Unicode data/Hangul](#): data used to generate the names of [Hangul](#) syllables (from [Jamo.txt](#))
- [Module:Unicode data/scripts](#): data mapping characters to their Unicode script properties (from [Scripts.txt](#)).

The name data modules ([Module:Unicode data/names/xxx](#)) were compiled from [UnicodeData.txt](#). Each one contains, at maximum, code points U+xxx000 to U+xxxFFF. **Lua-Fehler in mw.title.lua, Zeile 206: too many expensive function calls**

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```
local p = {}  
  
local floor = math.floor  
  
local function errorf(level, ...)  
    if type(level) == "number" then  
        return error(string.format(...), level + 1)
```

```
        else -- level is actually the format string.
            return error(string.format(level, ...), 2)
        end
    end
end

local function binary_range_search(codepoint, ranges)
    local low, mid, high
    low, high = 1, ranges.length or require "Module:TableTools".length(ranges)
    while low <= high do
        mid = floor((low + high) / 2)
        local range = ranges[mid]
        if codepoint < range[1] then
            high = mid - 1
        elseif codepoint <= range[2] then
            return range, mid
        else
            low = mid + 1
        end
    end
    return nil, mid
end
p.binary_range_search = binary_range_search

--[[
local function linear_range_search(codepoint, ranges)
    for i, range in ipairs(ranges) do
        if range[1] <= codepoint and codepoint <= range[2] then
            return range
        end
    end
end
end
--]]

-- Load a module by indexing "loader" with the name of the module minus the
-- "Module:Unicode data/" part. For instance, loader.blocks returns
-- [[Module:Unicode data/blocks]]. If a module cannot be loaded, false will be
-- returned.
local loader = setmetatable({}, {
    __index = function (self, key)
        local success, data = pcall(mw.loadData, "Module:Unicode data/" .. key)
        if not success then
            data = false
        end
        self[key] = data
        return data
    end
})

-- For the algorithm used to generate Hangul Syllable names,
-- see "Hangul Syllable Name Generation" in section 3.12 of the
-- Unicode Specification:
-- https://www.unicode.org/versions/Unicode11.0.0/ch03.pdf
local name_hooks = {
    { 0x00, 0x1F, "<control-%04X>" }, -- C0 control characters
    { 0x7F, 0x9F, "<control-%04X>" }, -- DEL and C1 control characters
    { 0x3400, 0x4DBF, "CJK UNIFIED IDEOGRAPH-%04X" }, -- CJK Ideograph Extension A
    { 0x4E00, 0x9FFF, "CJK UNIFIED IDEOGRAPH-%04X" }, -- CJK Ideograph Extension B
    { 0xAC00, 0xD7A3, function (codepoint) -- Hangul Syllables
        local Hangul_data = loader.Hangul
        local syllable_index = codepoint - 0xAC00

        return ("HANGUL SYLLABLE %s%s%s"):format(
            Hangul_data.leads[floor(syllable_index / Hangul_data.final_syllable_count)],
            Hangul_data.vowels[floor((syllable_index % Hangul_data.final_syllable_count) / Hangul_data.vowel_count)],
            Hangul_data.consonants[floor(syllable_index % Hangul_data.vowel_count)]
        )
    end
}

```

```
        / Hangul_data.trail_count)],
        Hangul_data.trails[syllable_index % Hangul_data.trail_co
    end },
    -- High Surrogates, High Private Use Surrogates, Low Surrogates
    { 0xD800, 0xDFFF, "<surrogate-%04X>" },
    { 0xE000, 0xF8FF, "<private-use-%04X>" }, -- Private Use
    -- CJK Compatibility Ideographs
    { 0xF900, 0xFA6D, "CJK COMPATIBILITY IDEOGRAPH-%04X" },
    { 0xFA70, 0xFAD9, "CJK COMPATIBILITY IDEOGRAPH-%04X" },
    { 0x17000, 0x187F7, "TANGUT IDEOGRAPH-%04X" }, -- Tangut Ideograph
    { 0x18800, 0x18AFF, function (codepoint)
        return ("TANGUT COMPONENT-%03d"):format(codepoint - 0x187FF)
    end },
    { 0x18D00, 0x18D08, "TANGUT IDEOGRAPH-%04X" }, -- Tangut Ideograph Supp
    { 0x1B170, 0x1B2FB, "NUSHU CHARACTER-%04X" }, -- Nushu
    { 0x20000, 0x2A6DF, "CJK UNIFIED IDEOGRAPH-%04X" }, -- CJK Ideograph Ex
    { 0x2A700, 0x2B738, "CJK UNIFIED IDEOGRAPH-%04X" }, -- CJK Ideograph Ex
    { 0x2B740, 0x2B81D, "CJK UNIFIED IDEOGRAPH-%04X" }, -- CJK Ideograph Ex
    { 0x2B820, 0x2CEA1, "CJK UNIFIED IDEOGRAPH-%04X" }, -- CJK Ideograph Ex
    { 0x2CEB0, 0x2EBE0, "CJK UNIFIED IDEOGRAPH-%04X" }, -- CJK Ideograph Ex
    -- CJK Compatibility Ideographs Supplement (Supplementary Ideographic Pla
    { 0x2F800, 0x2FA1D, "CJK COMPATIBILITY IDEOGRAPH-%04X" },
    { 0xE0100, 0xE01EF, function (codepoint) -- Variation Selectors Supplem
        return ("VARIATION SELECTOR-%d"):format(codepoint - 0xE0100 + 17)
    end},
    { 0x30000, 0x3134A, "CJK UNIFIED IDEOGRAPH-%04X" }, -- CJK Ideograph Ex
    { 0xF0000, 0xFFFFD, "<private-use-%04X>" }, -- Plane 15 Private Use
    { 0x100000, 0x10FFFFD, "<private-use-%04X>" } -- Plane 16 Private Use
}
name_hooks.length = #name_hooks

local name_range_cache

local function generate_name(data, codepoint)
    if type(data) == "string" then
        return data:format(codepoint)
    else
        return data(codepoint)
    end
end

end

--[
-- Checks that the code point is a number and in range.
-- Does not check whether code point is an integer.
-- Not used
local function check_codepoint(funcName, argIdx, val)
    require 'libraryUtil'.checkType(funcName, argIdx, val, 'number')
    if codepoint < 0 or 0x10FFFF < codepoint then
        errorf("Codepoint %04X out of range", codepoint)
    end
end

end
--]]

-- https://www.unicode.org/versions/Unicode11.0.0/ch04.pdf, section 4.8
function p.lookup_name(codepoint)
    -- U+FDD0-U+FDEF and all code points ending in FFFE or FFFF are Unassigne
    -- (Cn) and specifically noncharacters:
    -- https://www.unicode.org/faq/private_use.html#nonchar4
    if 0xFDD0 <= codepoint and (codepoint <= 0xFDEF
        or floor(codepoint % 0x10000) >= 0xFFFFE) then
        return ("<noncharacter-%04X>"):format(codepoint)
    end
end
```

```
    if name_range_cache -- Check if previously used "name hook" applies to the
        and codepoint >= name_range_cache[1]
        and codepoint <= name_range_cache[2] then
            return generate_name(name_range_cache[3], codepoint)
        end

    local range = binary_range_search(codepoint, name_hooks)
    if range then
        name_range_cache = range
        return generate_name(range[3], codepoint)
    end

    local data = loader[('names/%03X'):format(codepoint / 0x1000)]

    if data and data[codepoint] then
        return data[codepoint]

        -- Unassigned (Cn) consists of noncharacters and reserved characters.
        -- The character has been established not to be a noncharacter,
        -- and if it were assigned, its name would already have been retrieved,
        -- so it must be reserved.
    else
        return ("<reserved-%04X>"):format(codepoint)
    end
end

--[[
-- No image data modules on Wikipedia yet.
function p.lookup_image(codepoint)
    local data = loader[('images/%03X'):format(codepoint / 0x1000)]

    if data then
        return data[codepoint]
    end
end
--]]

local planes = {
    [ 0] = "Basic Multilingual Plane";
    [ 1] = "Supplementary Multilingual Plane";
    [ 2] = "Supplementary Ideographic Plane";
    [ 3] = "Tertiary Ideographic Plane";
    [14] = "Supplementary Special-purpose Plane";
    [15] = "Supplementary Private Use Area-A";
    [16] = "Supplementary Private Use Area-B";
}

-- Load [[Module:Unicode data/blocks]] if needed and assign it to this variable.
local blocks

local function block_iter(blocks, i)
    i = i + 1
    local data = blocks[i]
    if data then
        -- Unpack doesn't work on tables loaded with mw.loadData.
        return i, data[1], data[2], data[3]
    end
end

-- An ipairs-type iterator generator for the list of blocks.
function p.enum_blocks()
    local blocks = loader.blocks
    return block_iter, blocks, 0
end
```

```
function p.lookup_plane(codepoint)
    local i = floor(codepoint / 0x10000)
    return planes[i] or ("Plane %u"):format(i)
end

function p.lookup_block(codepoint)
    local blocks = loader.blocks
    local range = binary_range_search(codepoint, blocks)
    if range then
        return range[3]
    else
        return "No Block"
    end
end

function p.get_block_info(name)
    for i, block in ipairs(loader.blocks) do
        if block[3] == name then
            return block
        end
    end
end

function p.is_valid_pagename(pagename)
    local has_nonws = false

    for cp in mw.ustring.gcodepoint(pagename) do
        if (cp == 0x0023) -- #
        or (cp == 0x005B) -- [
        or (cp == 0x005D) -- ]
        or (cp == 0x007B) -- {
        or (cp == 0x007C) -- |
        or (cp == 0x007D) -- }
        or (cp == 0x180E) -- MONGOLIAN VOWEL SEPARATOR
        or ((cp >= 0x2000) and (cp <= 0x200A)) -- spaces in General Punct
        or (cp == 0xFFFFD) -- REPLACEMENT CHARACTER
        then
            return false
        end

        local printable, result = p.is_printable(cp)
        if not printable then
            return false
        end

        if result ~= "space-separator" then
            has_nonws = true
        end
    end

    return has_nonws
end

local function manual_unpack(what, from)
    if what[from + 1] == nil then
        return what[from]
    end

    local result = {}
    from = from or 1
    for i, item in ipairs(what) do
        if i >= from then
            table.insert(result, item)
        end
    end
end
```

```
        end
    end
    return unpack(result)
end

local function compare_ranges(range1, range2)
    return range1[1] < range2[1]
end

-- Creates a function to look up data in a module that contains "singles" (a
-- code point-to-data map) and "ranges" (an array containing arrays that contain
-- the low and high code points of a range and the data associated with that
-- range).
-- "loader" loads and returns the "singles" and "ranges" tables.
-- "match_func" is passed the code point and either the data or the "dots", and
-- generates the final result of the function.
-- The varargs ("dots") describes the default data to be returned if there wasn't
-- a match.
-- In case the function is used more than once, "cache" saves ranges that have
-- already been found to match, or a range whose data is the default if there
-- was no match.
local function memo_lookup(data_module_subpage, match_func, ...)
    local dots = { ... }
    local cache = {}
    local singles, ranges

    return function (codepoint)
        if not singles then
            local data_module = loader[data_module_subpage]
            singles, ranges = data_module.singles, data_module.ranges
        end

        if singles[codepoint] then
            return match_func(codepoint, singles[codepoint])
        end

        local range = binary_range_search(codepoint, cache)
        if range then
            return match_func(codepoint, manual_unpack(range, 3))
        end

        local range, index = binary_range_search(codepoint, ranges)
        if range then
            table.insert(cache, range)
            table.sort(cache, compare_ranges)
            return match_func(codepoint, manual_unpack(range, 3))
        end

        if ranges[index] then
            local dots_range
            if codepoint > ranges[index][2] then
                dots_range = {
                    ranges[index][2] + 1,
                    ranges[index + 1] and ranges[index + 1][1]
                }
            else -- codepoint < range[index][1]
                dots_range = {
                    ranges[index - 1] and ranges[index - 1][2],
                    ranges[index][1] - 1,
                }
            end
            return match_func(codepoint, manual_unpack(dots_range, 3))
        end

        table.sort(cache, compare_ranges)
    end
end
```

```

        end
        return match_func(codepoint)
    end
end

-- Get a code point's combining class value in [[Module:Unicode data/combining]]
-- and return whether this value is not zero. Zero is assigned as the default
-- if the combining class value is not found in this data module.
-- That is, return true if character is combining, or false if it is not.
-- See https://www.unicode.org/reports/tr44/#Canonical\_Combining\_Class\_Values for
-- more information.
p.is_combining = memo_lookup(
    "combining",
    function (codepoint, combining_class)
        return combining_class and combining_class ~= 0 or false
    end,
    0)

function p.add_dotted_circle(str)
    return (mw.ustream.gsub(str, ".",
        function(char)
            if p.is_combining(mw.ustream.codepoint(char)) then
                return '◌' .. char
            end
        end))
end

end

local lookup_control = memo_lookup(
    "control",
    function (codepoint, ccc)
        return ccc or "assigned"
    end,
    "assigned")
p.lookup_control = lookup_control

function p.is_assigned(codepoint)
    return lookup_control(codepoint) ~= "unassigned"
end

function p.is_printable(codepoint)
    local result = lookup_control(codepoint)
    return (result == "assigned") or (result == "space-separator"), result
end

function p.is_whitespace(codepoint)
    local result = lookup_control(codepoint)
    return (result == "space-separator"), result
end

p.lookup_category = memo_lookup(
    "category",
    function (codepoint, category)
        return category
    end,
    "Cn")

local lookup_script = memo_lookup(
    "scripts",
    function (codepoint, script_code)
        return script_code or 'Zzzz'
    end,
    "Zzzz")
p.lookup_script = lookup_script
```

```
function p.get_best_script(str)
  -- Check type of argument, because mw.text.decode coerces numbers to strings
  require "libraryUtil".checkType("get_best_script", 1, str, "string")

  -- Convert HTML character references (including named character references
  -- or character entities) to characters.
  str = mw.text.decode(str, true)

  local scripts = {}
  for codepoint in mw.ustr.gcodepoint(str) do
    local script = lookup_script(codepoint)

    -- Ignore "Inherited", "Undetermined", or "Uncoded" scripts.
    if not (script == "Zyyy" or script == "Zinh" or script == "Zzzz")
      scripts[script] = true
    end
  end

  -- If scripts does not contain two or more keys,
  -- return first and only key (script code) in table.
  if not next(scripts, next(scripts)) then
    return next(scripts)
  end -- else return majority script, or else "Zzzz"?
end

function p.is_Latin(str)
  require "libraryUtil".checkType("get_best_script", 1, str, "string")
  str = mw.text.decode(str, true)

  -- Search for the leading bytes that introduce the UTF-8 encoding of the
  -- code points U+0340-U+10FFFF. If they are not found and there is at least
  -- one Latin-script character, the string counts as Latin, because the rest
  -- of the characters can only be Zyyy, Zinh, and Zzzz.
  -- The only scripts found below U+0370 (the first code point of the Greek
  -- and Coptic block) are Latn, Zyyy, Zinh, and Zzzz.
  -- See the codepage in the [[UTF-8]] article.
  if not str:find "[\205-\244]" then
    for codepoint in mw.ustr.gcodepoint(str) do
      if lookup_script(codepoint) == "Latn" then
        return true
      end
    end
  end

  local Latn = false

  for codepoint in mw.ustr.gcodepoint(str) do
    local script = lookup_script(codepoint)

    if script == "Latn" then
      Latn = true
    elseif not (script == "Zyyy" or script == "Zinh"
      or script == "Zzzz") then
      return false
    end
  end

  return Latn
end

-- Checks that a string contains only characters belonging to right-to-left
-- scripts, or characters of ignorable scripts.
function p.is_rtl(str)
```

```
require "libraryUtil".checkType("get_best_script", 1, str, "string")
str = mw.text.decode(str, true)

-- Search for the leading bytes that introduce the UTF-8 encoding of the
-- code points U+0580-U+10FFFF. If they are not found, the string can only
-- have characters from a left-to-right script, because the first code point
-- in a right-to-left script is U+0591, in the Hebrew block.
if not str:find "[\214-\244]" then
    return false
end

local result = false
local rtl = loader.scripts.rtl
for codepoint in mw.ustr.gcodepoint(str) do
    local script = lookup_script(codepoint)

    if rtl[script] then
        result = true
    elseif not (script == "Zyyy" or script == "Zinh"
                or script == "Zzzz") then
        return false
    end
end

return result
end

local function get_codepoint(args, arg)
    local codepoint_string = args[arg]
        or errorf(2, "Parameter %s is required", tostring(arg))
    local codepoint = tonumber(codepoint_string, 16)
        or errorf(2, "Parameter %s is not a code point in hexadecimal base",
            tostring(arg))
    if not (0 <= codepoint and codepoint <= 0x10FFFF) then
        errorf(2, "code point in parameter %s out of range", tostring(arg))
    end
    return codepoint
end

local function get_func(args, arg, prefix)
    local suffix = args[arg]
        or errorf(2, "Parameter %s is required", tostring(arg))
    suffix = mw.text.trim(suffix)
    local func_name = prefix .. suffix
    local func = p[func_name]
        or errorf(2, "There is no function '%s'", func_name)
    return func
end

-- This function allows any of the "lookup" functions to be invoked. The first
-- parameter is the word after "lookup_"; the second parameter is the code point
-- in hexadecimal base.
function p.lookup(frame)
    local func = get_func(frame.args, 1, "lookup_")
    local codepoint = get_codepoint(frame.args, 2)
    local result = func(codepoint)
    if func == p.lookup_name then
        -- Prevent code point labels such as <control-0000> from being
        -- interpreted as HTML tags.
        result = result:gsub("<", "&lt;")
    end
    return result
end
```



```
function p.is(frame)
  local func = get_func(frame.args, 1, "is_")

  -- is_Latin and is_valid_pagename take strings.
  if func == p.is_Latin or func == p.is_valid_pagename or func == p.is_rtl
    return (func(frame.args[2]))
  else -- The rest take code points.
    local codepoint = get_codepoint(frame.args, 2)
    return (func(codepoint)) -- Adjust to one result.
  end
end
end
return p
```



## Modul:Unicode data/blocks

Insert non-formatted text here Contains data on **Unicode blocks** for **Module:Unicode data** derived from **Blocks.txt** in the Unicode Character Database.

```
-- Compiled from http://www.unicode.org/Public/UNIDATA/Blocks.txt.
local blocks = {
  { 0x000000, 0x00007F, "Basic Latin" },
  { 0x000080, 0x0000FF, "Latin-1 Supplement" },
  { 0x000100, 0x00017F, "Latin Extended-A" },
  { 0x000180, 0x00024F, "Latin Extended-B" },
  { 0x000250, 0x0002AF, "IPA Extensions" },
  { 0x0002B0, 0x0002FF, "Spacing Modifier Letters" },
  { 0x000300, 0x00036F, "Combining Diacritical Marks" },
  { 0x000370, 0x0003FF, "Greek and Coptic" },
  { 0x000400, 0x0004FF, "Cyrillic" },
  { 0x000500, 0x00052F, "Cyrillic Supplement" },
  { 0x000530, 0x00058F, "Armenian" },
  { 0x000590, 0x0005FF, "Hebrew" },
  { 0x000600, 0x0006FF, "Arabic" },
  { 0x000700, 0x00074F, "Syriac" },
  { 0x000750, 0x00077F, "Arabic Supplement" },
  { 0x000780, 0x0007BF, "Thaana" },
  { 0x0007C0, 0x0007FF, "Nko" },
  { 0x000800, 0x00083F, "Samaritan" },
  { 0x000840, 0x00085F, "Mandaic" },
  { 0x000860, 0x00086F, "Syriac Supplement" },
  { 0x000870, 0x00089F, "Arabic Extended-B" },
  { 0x0008A0, 0x0008FF, "Arabic Extended-A" },
  { 0x000900, 0x00097F, "Devanagari" },
  { 0x000980, 0x0009FF, "Bengali" },
  { 0x000A00, 0x000A7F, "Gurmukhi" },
  { 0x000A80, 0x000AFF, "Gujarati" },
  { 0x000B00, 0x000B7F, "Oriya" },
  { 0x000B80, 0x000BFF, "Tamil" },
  { 0x000C00, 0x000C7F, "Telugu" },
  { 0x000C80, 0x000CFF, "Kannada" },
  { 0x000D00, 0x000D7F, "Malayalam" },
  { 0x000D80, 0x000DFF, "Sinhala" },
  { 0x000E00, 0x000E7F, "Thai" },
  { 0x000E80, 0x000EFF, "Lao" },
  { 0x000F00, 0x000FFF, "Tibetan" },
  { 0x001000, 0x00109F, "Myanmar" },
  { 0x0010A0, 0x0010FF, "Georgian" },
  { 0x001100, 0x0011FF, "Hangul Jamo" },
  { 0x001200, 0x00137F, "Ethiopic" },
  { 0x001380, 0x00139F, "Ethiopic Supplement" },
  { 0x0013A0, 0x0013FF, "Cherokee" },
  { 0x001400, 0x00167F, "Unified Canadian Aboriginal Syllabics" },
  { 0x001680, 0x00169F, "Ogham" },
  { 0x0016A0, 0x0016FF, "Runic" },
  { 0x001700, 0x00171F, "Tagalog" },
  { 0x001720, 0x00173F, "Hanunoo" },
  { 0x001740, 0x00175F, "Buhid" },
  { 0x001760, 0x00177F, "Tagbanwa" },
  { 0x001780, 0x0017FF, "Khmer" },
  { 0x001800, 0x0018AF, "Mongolian" },
  { 0x0018B0, 0x0018FF, "Unified Canadian Aboriginal Syllabics Extended" },
  { 0x001900, 0x00194F, "Limbu" }
}
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```
{ 0x001950, 0x00197F, "Tai Le"}
{ 0x001980, 0x0019DF, "New Tai Lue"}
{ 0x0019E0, 0x0019FF, "Khmer Symbols"}
{ 0x001A00, 0x001A1F, "Buginese"}
{ 0x001A20, 0x001AAF, "Tai Tham"}
{ 0x001AB0, 0x001AFF, "Combining Diacritical Marks Extended"}
{ 0x001B00, 0x001B7F, "Balinese"}
{ 0x001B80, 0x001BBF, "Sundanese"}
{ 0x001BC0, 0x001BFF, "Batak"}
{ 0x001C00, 0x001C4F, "Lepcha"}
{ 0x001C50, 0x001C7F, "Ol Chiki"}
{ 0x001C80, 0x001C8F, "Cyrillic Extended-C"}
{ 0x001C90, 0x001CBF, "Georgian Extended"}
{ 0x001CC0, 0x001CCF, "Sundanese Supplement"}
{ 0x001CD0, 0x001CFF, "Vedic Extensions"}
{ 0x001D00, 0x001D7F, "Phonetic Extensions"}
{ 0x001D80, 0x001DBF, "Phonetic Extensions Supplement"}
{ 0x001DC0, 0x001DFF, "Combining Diacritical Marks Supplement"}
{ 0x001E00, 0x001EFF, "Latin Extended Additional"}
{ 0x001F00, 0x001FFF, "Greek Extended"}
{ 0x002000, 0x00206F, "General Punctuation"}
{ 0x002070, 0x00209F, "Superscripts and Subscripts"}
{ 0x0020A0, 0x0020CF, "Currency Symbols"}
{ 0x0020D0, 0x0020FF, "Combining Diacritical Marks for Symbols"}
{ 0x002100, 0x00214F, "Letterlike Symbols"}
{ 0x002150, 0x00218F, "Number Forms"}
{ 0x002190, 0x0021FF, "Arrows"}
{ 0x002200, 0x0022FF, "Mathematical Operators"}
{ 0x002300, 0x0023FF, "Miscellaneous Technical"}
{ 0x002400, 0x00243F, "Control Pictures"}
{ 0x002440, 0x00245F, "Optical Character Recognition"}
{ 0x002460, 0x0024FF, "Enclosed Alphanumerics"}
{ 0x002500, 0x00257F, "Box Drawing"}
{ 0x002580, 0x00259F, "Block Elements"}
{ 0x0025A0, 0x0025FF, "Geometric Shapes"}
{ 0x002600, 0x0026FF, "Miscellaneous Symbols"}
{ 0x002700, 0x0027BF, "Dingbats"}
{ 0x0027C0, 0x0027EF, "Miscellaneous Mathematical Symbols-A"}
{ 0x0027F0, 0x0027FF, "Supplemental Arrows-A"}
{ 0x002800, 0x0028FF, "Braille Patterns"}
{ 0x002900, 0x00297F, "Supplemental Arrows-B"}
{ 0x002980, 0x0029FF, "Miscellaneous Mathematical Symbols-B"}
{ 0x002A00, 0x002AFF, "Supplemental Mathematical Operators"}
{ 0x002B00, 0x002BFF, "Miscellaneous Symbols and Arrows"}
{ 0x002C00, 0x002C5F, "Glagolitic"}
{ 0x002C60, 0x002C7F, "Latin Extended-C"}
{ 0x002C80, 0x002CFF, "Coptic"}
{ 0x002D00, 0x002D2F, "Georgian Supplement"}
{ 0x002D30, 0x002D7F, "Tifinagh"}
{ 0x002D80, 0x002DDF, "Ethiopic Extended"}
{ 0x002DE0, 0x002DFF, "Cyrillic Extended-A"}
{ 0x002E00, 0x002E7F, "Supplemental Punctuation"}
{ 0x002E80, 0x002EFF, "CJK Radicals Supplement"}
{ 0x002F00, 0x002FDF, "Kangxi Radicals"}
{ 0x002FF0, 0x002FFF, "Ideographic Description Characters"}
{ 0x003000, 0x00303F, "CJK Symbols and Punctuation"}
{ 0x003040, 0x00309F, "Hiragana"}
{ 0x0030A0, 0x0030FF, "Katakana"}
{ 0x003100, 0x00312F, "Bopomofo"}
{ 0x003130, 0x00318F, "Hangul Compatibility Jamo"}
{ 0x003190, 0x00319F, "Kanbun"}
{ 0x0031A0, 0x0031BF, "Bopomofo Extended"}
{ 0x0031C0, 0x0031EF, "CJK Strokes"}
{ 0x0031F0, 0x0031FF, "Katakana Phonetic Extensions"}
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{ 0x003200, 0x0032FF, "Enclosed CJK Letters and Months"}
{ 0x003300, 0x0033FF, "CJK Compatibility"}
{ 0x003400, 0x004DBF, "CJK Unified Ideographs Extension A"}
{ 0x004DC0, 0x004DFF, "Yijing Hexagram Symbols"}
{ 0x004E00, 0x009FFF, "CJK Unified Ideographs"}
{ 0x00A000, 0x00A48F, "Yi Syllables"}
{ 0x00A490, 0x00A4CF, "Yi Radicals"}
{ 0x00A4D0, 0x00A4FF, "Lisu"}
{ 0x00A500, 0x00A63F, "Vai"}
{ 0x00A640, 0x00A69F, "Cyrillic Extended-B"}
{ 0x00A6A0, 0x00A6FF, "Bamum"}
{ 0x00A700, 0x00A71F, "Modifier Tone Letters"}
{ 0x00A720, 0x00A7FF, "Latin Extended-D"}
{ 0x00A800, 0x00A82F, "Syloti Nagri"}
{ 0x00A830, 0x00A83F, "Common Indic Number Forms"}
{ 0x00A840, 0x00A87F, "Phags-pa"}
{ 0x00A880, 0x00A8DF, "Saurashtra"}
{ 0x00A8E0, 0x00A8FF, "Devanagari Extended"}
{ 0x00A900, 0x00A92F, "Kayah Li"}
{ 0x00A930, 0x00A95F, "Rejang"}
{ 0x00A960, 0x00A97F, "Hangul Jamo Extended-A"}
{ 0x00A980, 0x00A9DF, "Javanese"}
{ 0x00A9E0, 0x00A9FF, "Myanmar Extended-B"}
{ 0x00AA00, 0x00AA5F, "Cham"}
{ 0x00AA60, 0x00AA7F, "Myanmar Extended-A"}
{ 0x00AA80, 0x00AADF, "Tai Viet"}
{ 0x00AAE0, 0x00AAFF, "Meetei Mayek Extensions"}
{ 0x00AB00, 0x00AB2F, "Ethiopic Extended-A"}
{ 0x00AB30, 0x00AB6F, "Latin Extended-E"}
{ 0x00AB70, 0x00ABBF, "Cherokee Supplement"}
{ 0x00ABC0, 0x00ABFF, "Meetei Mayek"}
{ 0x00AC00, 0x00D7AF, "Hangul Syllables"}
{ 0x00D7B0, 0x00D7FF, "Hangul Jamo Extended-B"}
{ 0x00D800, 0x00DB7F, "High Surrogates"}
{ 0x00DB80, 0x00DBFF, "High Private Use Surrogates"}
{ 0x00DC00, 0x00DFFF, "Low Surrogates"}
{ 0x00E000, 0x00F8FF, "Private Use Area"}
{ 0x00F900, 0x00FAFF, "CJK Compatibility Ideographs"}
{ 0x00FB00, 0x00FB4F, "Alphabetic Presentation Forms"}
{ 0x00FB50, 0x00FDFF, "Arabic Presentation Forms-A"}
{ 0x00FE00, 0x00FE0F, "Variation Selectors"}
{ 0x00FE10, 0x00FE1F, "Vertical Forms"}
{ 0x00FE20, 0x00FE2F, "Combining Half Marks"}
{ 0x00FE30, 0x00FE4F, "CJK Compatibility Forms"}
{ 0x00FE50, 0x00FE6F, "Small Form Variants"}
{ 0x00FE70, 0x00FEFF, "Arabic Presentation Forms-B"}
{ 0x00FF00, 0x00FFEF, "Halfwidth and Fullwidth Forms"}
{ 0x00FFF0, 0x00FFFF, "Specials"}
{ 0x010000, 0x01007F, "Linear B Syllabary"}
{ 0x010080, 0x0100FF, "Linear B Ideograms"}
{ 0x010100, 0x01013F, "Aegean Numbers"}
{ 0x010140, 0x01018F, "Ancient Greek Numbers"}
{ 0x010190, 0x0101CF, "Ancient Symbols"}
{ 0x0101D0, 0x0101FF, "Phaistos Disc"}
{ 0x010280, 0x01029F, "Lycian"}
{ 0x0102A0, 0x0102DF, "Carian"}
{ 0x0102E0, 0x0102FF, "Coptic Epact Numbers"}
{ 0x010300, 0x01032F, "Old Italic"}
{ 0x010330, 0x01034F, "Gothic"}
{ 0x010350, 0x01037F, "Old Permic"}
{ 0x010380, 0x01039F, "Ugaritic"}
{ 0x0103A0, 0x0103DF, "Old Persian"}
{ 0x010400, 0x01044F, "Deseret"}
{ 0x010450, 0x01047F, "Shavian"}
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{ 0x010480, 0x0104AF, "Osmanya"
{ 0x0104B0, 0x0104FF, "Osage"
{ 0x010500, 0x01052F, "Elbasan"
{ 0x010530, 0x01056F, "Caucasian Albanian"
{ 0x010570, 0x0105BF, "Vithkuqi"
{ 0x010600, 0x01077F, "Linear A"
{ 0x010780, 0x0107BF, "Latin Extended-F"
{ 0x010800, 0x01083F, "Cypriot Syllabary"
{ 0x010840, 0x01085F, "Imperial Aramaic"
{ 0x010860, 0x01087F, "Palmyrene"
{ 0x010880, 0x0108AF, "Nabataean"
{ 0x0108E0, 0x0108FF, "Hatran"
{ 0x010900, 0x01091F, "Phoenician"
{ 0x010920, 0x01093F, "Lydian"
{ 0x010980, 0x01099F, "Meroitic Hieroglyphs"
{ 0x0109A0, 0x0109FF, "Meroitic Cursive"
{ 0x010A00, 0x010A5F, "Kharoshthi"
{ 0x010A60, 0x010A7F, "Old South Arabian"
{ 0x010A80, 0x010A9F, "Old North Arabian"
{ 0x010AC0, 0x010AFF, "Manichaean"
{ 0x010B00, 0x010B3F, "Avestan"
{ 0x010B40, 0x010B5F, "Inscriptional Parthian"
{ 0x010B60, 0x010B7F, "Inscriptional Pahlavi"
{ 0x010B80, 0x010BAF, "Psalter Pahlavi"
{ 0x010C00, 0x010C4F, "Old Turkic"
{ 0x010C80, 0x010CFF, "Old Hungarian"
{ 0x010D00, 0x010D3F, "Hanifi Rohingya"
{ 0x010E60, 0x010E7F, "Rumi Numeral Symbols"
{ 0x010E80, 0x010EBF, "Yezidi"
{ 0x010F00, 0x010F2F, "Old Sogdian"
{ 0x010F30, 0x010F6F, "Sogdian"
{ 0x010F70, 0x010FAF, "Old Uyghur"
{ 0x010FB0, 0x010FDF, "Chorasmian"
{ 0x010FE0, 0x010FFF, "Elymaic"
{ 0x011000, 0x01107F, "Brahmi"
{ 0x011080, 0x0110CF, "Kaithi"
{ 0x0110D0, 0x0110FF, "Sora Sompeng"
{ 0x011100, 0x01114F, "Chakma"
{ 0x011150, 0x01117F, "Mahajani"
{ 0x011180, 0x0111DF, "Sharada"
{ 0x0111E0, 0x0111FF, "Sinhala Archaic Numbers"
{ 0x011200, 0x01124F, "Khojki"
{ 0x011280, 0x0112AF, "Multani"
{ 0x0112B0, 0x0112FF, "Khudawadi"
{ 0x011300, 0x01137F, "Grantha"
{ 0x011400, 0x01147F, "Newa"
{ 0x011480, 0x0114DF, "Tirhuta"
{ 0x011580, 0x0115FF, "Siddham"
{ 0x011600, 0x01165F, "Modi"
{ 0x011660, 0x01167F, "Mongolian Supplement"
{ 0x011680, 0x0116CF, "Takri"
{ 0x011700, 0x01174F, "Ahom"
{ 0x011800, 0x01184F, "Dogra"
{ 0x0118A0, 0x0118FF, "Warang Citi"
{ 0x011900, 0x01195F, "Dives Akuru"
{ 0x0119A0, 0x0119FF, "Nandinagari"
{ 0x011A00, 0x011A4F, "Zanabazar Square"
{ 0x011A50, 0x011AAF, "Soyombo"
{ 0x011AB0, 0x011ABF, "Unified Canadian Aboriginal Syllabics Extended-A"
{ 0x011AC0, 0x011AFF, "Pau Cin Hau"
{ 0x011C00, 0x011C6F, "Bhaiksuki"
{ 0x011C70, 0x011CBF, "Marchen"
{ 0x011D00, 0x011D5F, "Masaram Gondi"
{ 0x011D60, 0x011DAF, "Gunjala Gondi"



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{ 0x011EE0, 0x011EFF, "Makasar"}
{ 0x011FB0, 0x011FBF, "Lisu Supplement"}
{ 0x011FC0, 0x011FFF, "Tamil Supplement"}
{ 0x012000, 0x0123FF, "Cuneiform"}
{ 0x012400, 0x01247F, "Cuneiform Numbers and Punctuation"}
{ 0x012480, 0x01254F, "Early Dynastic Cuneiform"}
{ 0x012F90, 0x012FFF, "Cypro-Minoan"}
{ 0x013000, 0x01342F, "Egyptian Hieroglyphs"}
{ 0x013430, 0x01343F, "Egyptian Hieroglyph Format Controls"}
{ 0x014400, 0x01467F, "Anatolian Hieroglyphs"}
{ 0x016800, 0x016A3F, "Bamum Supplement"}
{ 0x016A40, 0x016A6F, "Mro"}
{ 0x016A70, 0x016ACF, "Tangsa"}
{ 0x016AD0, 0x016AFF, "Bassa Vah"}
{ 0x016B00, 0x016B8F, "Pahawh Hmong"}
{ 0x016E40, 0x016E9F, "Medefaidrin"}
{ 0x016F00, 0x016F9F, "Miao"}
{ 0x016FE0, 0x016FFF, "Ideographic Symbols and Punctuation"}
{ 0x017000, 0x0187FF, "Tangut"}
{ 0x018800, 0x018AFF, "Tangut Components"}
{ 0x018B00, 0x018CFF, "Khitani Small Script"}
{ 0x018D00, 0x018D7F, "Tangut Supplement"}
{ 0x01AFF0, 0x01AFFF, "Kana Extended-B"}
{ 0x01B000, 0x01B0FF, "Kana Supplement"}
{ 0x01B100, 0x01B12F, "Kana Extended-A"}
{ 0x01B130, 0x01B16F, "Small Kana Extension"}
{ 0x01B170, 0x01B2FF, "Nushu"}
{ 0x01BC00, 0x01BC9F, "Duployan"}
{ 0x01BCA0, 0x01BCAF, "Shorthand Format Controls"}
{ 0x01CF00, 0x01CFCF, "Znamenny Musical Notation"}
{ 0x01D000, 0x01D0FF, "Byzantine Musical Symbols"}
{ 0x01D100, 0x01D1FF, "Musical Symbols"}
{ 0x01D200, 0x01D24F, "Ancient Greek Musical Notation"}
{ 0x01D2E0, 0x01D2FF, "Mayan Numerals"}
{ 0x01D300, 0x01D35F, "Tai Xuan Jing Symbols"}
{ 0x01D360, 0x01D37F, "Counting Rod Numerals"}
{ 0x01D400, 0x01D7FF, "Mathematical Alphanumeric Symbols"}
{ 0x01D800, 0x01DAAF, "Sutton SignWriting"}
{ 0x01DF00, 0x01DFFF, "Latin Extended-G"}
{ 0x01E000, 0x01E02F, "Glagolitic Supplement"}
{ 0x01E100, 0x01E14F, "Nyiakeng Puachue Hmong"}
{ 0x01E290, 0x01E2BF, "Toto"}
{ 0x01E2C0, 0x01E2FF, "Wancho"}
{ 0x01E7E0, 0x01E7FF, "Ethiopic Extended-B"}
{ 0x01E800, 0x01E8DF, "Mende Kikakui"}
{ 0x01E900, 0x01E95F, "Adlam"}
{ 0x01EC70, 0x01ECBF, "Indic Siyaq Numbers"}
{ 0x01ED00, 0x01ED4F, "Ottoman Siyaq Numbers"}
{ 0x01EE00, 0x01EEFF, "Arabic Mathematical Alphabetic Symbols"}
{ 0x01F000, 0x01F02F, "Mahjong Tiles"}
{ 0x01F030, 0x01F09F, "Domino Tiles"}
{ 0x01F0A0, 0x01F0FF, "Playing Cards"}
{ 0x01F100, 0x01F1FF, "Enclosed Alphanumeric Supplement"}
{ 0x01F200, 0x01F2FF, "Enclosed Ideographic Supplement"}
{ 0x01F300, 0x01F5FF, "Miscellaneous Symbols and Pictographs"}
{ 0x01F600, 0x01F64F, "Emoticons"}
{ 0x01F650, 0x01F67F, "Ornamental Dingbats"}
{ 0x01F680, 0x01F6FF, "Transport and Map Symbols"}
{ 0x01F700, 0x01F77F, "Alchemical Symbols"}
{ 0x01F780, 0x01F7FF, "Geometric Shapes Extended"}
{ 0x01F800, 0x01F8FF, "Supplemental Arrows-C"}
{ 0x01F900, 0x01F9FF, "Supplemental Symbols and Pictographs"}
{ 0x01FA00, 0x01FA6F, "Chess Symbols"}
{ 0x01FA70, 0x01FAFF, "Symbols and Pictographs Extended-A"}
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{ 0x01FB00, 0x01FBFF, "Symbols for Legacy Computing" }
{ 0x020000, 0x02A6DF, "CJK Unified Ideographs Extension B" }
{ 0x02A700, 0x02B73F, "CJK Unified Ideographs Extension C" }
{ 0x02B740, 0x02B81F, "CJK Unified Ideographs Extension D" }
{ 0x02B820, 0x02CEAF, "CJK Unified Ideographs Extension E" }
{ 0x02CEB0, 0x02EBEF, "CJK Unified Ideographs Extension F" }
{ 0x02F800, 0x02FA1F, "CJK Compatibility Ideographs Supplement" }
{ 0x030000, 0x03134F, "CJK Unified Ideographs Extension G" }
{ 0x0E0000, 0x0E007F, "Tags" }
{ 0x0E0100, 0x0E01EF, "Variation Selectors Supplement" }
{ 0x0F0000, 0x0FFFFFF, "Supplementary Private Use Area-A" }
{ 0x100000, 0x10FFFF, "Supplementary Private Use Area-B" }
}
blocks.length = #blocks

return blocks
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