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# INSTALL INSTRUCTIONS: save as ~/.gdbinit
#
# DESCRIPTION: A user-friendly gdb configuration file, for x86/x86_64 and ARM
platforms.
#
# REVISION : 8.0.5 (18/08/2013)
#
# CONTRIBUTORS: mammon_, elaine, pusillus, mong, zhang le, 10kit,
#                 truthix the cyberpunk, fG!, gln
#
# FEEDBACK: http://reverse.put.as - reverser@put.as
#
# NOTES: 'help user' in gdb will list the commands/descriptions in this file
#         'context on' now enables auto-display of context screen
#
# MAC OS X NOTES: If you are using this on Mac OS X, you must either attach gdb to
a process
#                 or launch gdb without any options and then load the binary file
you want to analyse with "exec-file" option
#                 If you load the binary from the command line, like $gdb binary-
name, this will not work as it should
#                 For more information, read it here
http://reverse.put.as/2008/11/28/apples-gdb-bug/
#
# UPDATE: This bug can be fixed in gdb source. Refer to
http://reverse.put.as/2009/08/10/fix-for-apples-gdb-bug-or-why-apple-forks-are-bad/
#         and http://reverse.put.as/2009/08/26/gdb-patches/ (if you want the fixed
binary for i386)
#
#                 An updated version of the patch and binary is available at
http://reverse.put.as/2011/02/21/update-to-gdb-patches-fix-a-new-bug/
#
# iOS NOTES: iOS gdb from Cydia (and Apple's) suffer from the same OS X bug.
#                 If you are using this on Mac OS X or iOS, you must either attach
gdb to a process
#                 or launch gdb without any options and then load the binary file you
want to analyse with "exec-file" option
#                 If you load the binary from the command line, like $gdb binary-name,
this will not work as it should
#                 For more information, read it here
http://reverse.put.as/2008/11/28/apples-gdb-bug/
#
# CHANGELOG: (older changes at the end of the file)
#
#     Version 8.0.6 (05/09/2013)
#         - Add patch command to convert bytes to little-endian and patch memory
#
#     Version 8.0.5 (18/08/2013)
#         - Add commands header and loadcmds to dump Mach-O header information
#         - Other fixes and additions from previous commits
#
#     Version 8.0.4 (08/05/2013)
#         - Detect automatically 32 or 64 bits archs using sizeof(void*).
#             Thanks to Tyilo for the simple but very effective idea!
#         - Typo in hexdump command also fixed by vuquangtrong.
#         - Add shortcuts to attach to VMware kernel debugging gdb stub (kernel32 and
kernel64)
#
#     Version 8.0.3 (21/03/2013)
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#      - Add option to colorize or not output (thanks to argp and skier for the
request and ideas!)
#      - Convert the escape codes into functions so colors can be easily customized
#      - Other enhancements available at git commit logs
#      Thanks to Plouj, argp, xristsos for their ideas and fixes!
#
#      Version 8.0.2 (31/07/2012)
#      - Merge pull request from mheistermann to support local modifications in a
.gdbinit.local file
#      - Add a missing opcode to the stepo command
#
#      Version 8.0.1 (23/04/2012)
#      - Small bug fix to the attsyntax and intelsyntax commands (changing X86
flavor variable was missing)
#
#      Version 8.0 (13/04/2012)
#      - Merged x86/x64 and ARM versions
#      - Added commands intelsyntax and attsyntax to switch between x86 disassembly
flavors
#      - Added new configuration variables ARM, ARMOPCODES, and X86FLAVOR
#      - Code cleanups and fixes to the indentation
#      - Bug fixes to some ARM related code
#      - Added the dumpmacho command to memory dump the mach-o header to a file
#
#      TODO:
#
# _____gdb options_____

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# set to 1 to have ARM target debugging as default, use the "arm" command to switch
inside gdb
set $ARM = 0
# set to 0 if you have problems with the colorized prompt - reported by Plouj with
Ubuntu gdb 7.2
set $COLOREDPROMPT = 1
# color the first line of the disassembly - default is green, if you want to change
it search for
# SETCOLOR1STLINE and modify it :-
set $SETCOLOR1STLINE = 0
# set to 0 to remove display of objectivec messages (default is 1)
set $SHOWOBJECTIVEC = 1
# set to 0 to remove display of cpu registers (default is 1)
set $SHOWCPUREGISTERS = 1
# set to 1 to enable display of stack (default is 0)
set $SHOWSTACK = 0
# set to 1 to enable display of data window (default is 0)
set $SHOWDATAWIN = 0
# set to 0 to disable colored display of changed registers
set $SHOWREGCHANGES = 0
# set to 1 so skip command to execute the instruction at the new location
# by default it EIP/RIP will be modified and update the new context but not execute
the instruction
set $SKIPEXECUTE = 0
# if $SKIPEXECUTE is 1 configure the type of execution
# 1 = use stepo (do not get into calls), 0 = use stepi (step into calls)
set $SKIPSTEP = 1
# show the ARM opcodes - change to 0 if you don't want such thing (in x/i command)
set $ARMOPCODES = 1
# x86 disassembly flavor: 0 for Intel, 1 for AT&T

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set $X86FLAVOR = 0
# use colorized output or not
set $USECOLOR = 0
# to use with remote KDP
set $KDP64BITS = -1
set $64BITS = 0

set confirm off
set verbose off
set history filename ~/.gdb_history
set history save

set output-radix 0x10
set input-radix 0x10

# These make gdb never pause in its output
set height 0
set width 0

set $SHOW_CONTEXT = 1
set $SHOW_NEST_INSN = 0

set $CONTEXTSIZE_STACK = 6
set $CONTEXTSIZE_DATA = 8
set $CONTEXTSIZE_CODE = 8

# _____end gdb options_____
# _____color functions_____
#
# color codes
set $BLACK = 0
set $RED = 1
set $GREEN = 2
set $YELLOW = 3
set $BLUE = 4
set $MAGENTA = 5
set $CYAN = 6
set $WHITE = 7

# CHANGME: If you want to modify the "theme" change the colors here
#           or just create a ~/.gdbinit.local and set these variables there
set $COLOR_REGNAME = $GREEN
set $COLOR_REGVAL = $BLACK
set $COLOR_REGVAL_MODIFIED = $RED
set $COLOR_SEPARATOR = $BLUE
set $COLOR_CPUFLAGS = $RED

# this is ugly but there's no else if available :-(

define color
if $USECOLOR == 1
    # BLACK
    if $arg0 == 0
        echo \033[30m
    else
        # RED
        if $arg0 == 1
            echo \033[31m

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else
    # GREEN
    if $arg0 == 2
        echo \033[32m
    else
        # YELLOW
        if $arg0 == 3
            echo \033[33m
        else
            # BLUE
            if $arg0 == 4
                echo \033[34m
            else
                # MAGENTA
                if $arg0 == 5
                    echo \033[35m
                else
                    # CYAN
                    if $arg0 == 6
                        echo \033[36m
                    else
                        # WHITE
                        if $arg0 == 7
                            echo \033[37m
                        end
                    end
                end
            end
        end
    end
end
end

define color_reset
    if $USECOLOR == 1
        echo \033[0m
    end
end

define color_bold
    if $USECOLOR == 1
        echo \033[1m
    end
end

define color_underline
    if $USECOLOR == 1
        echo \033[4m
    end
end

# this way anyone can have their custom prompt - argp's idea :-
# can also be used to redefine anything else in particular the colors aka theming
# just remap the color variables defined above
source ~/.gdbinit.local

# can't use the color functions because we are using the set command

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if $COLOREDPROMPT == 1
    set prompt \033[31mgdb$ \033[0m
end

# Initialize these variables else comparisons will fail for coloring
# we must initialize all of them at once, 32 and 64 bits, and ARM.
set $oldrax = 0
set $oldrbx = 0
set $oldrcx = 0
set $oldrdx = 0
set $oldrsi = 0
set $oldrdi = 0
set $oldrbp = 0
set $oldrsp = 0
set $oldr8 = 0
set $oldr9 = 0
set $oldr10 = 0
set $oldr11 = 0
set $oldr12 = 0
set $oldr13 = 0
set $oldr14 = 0
set $oldr15 = 0
set $oldeax = 0
set $oldebx = 0
set $oldecx = 0
set $oldedx = 0
set $oldesi = 0
set $oldedi = 0
set $oldebp = 0
set $oldesp = 0
set $oldr0 = 0
set $oldr1 = 0
set $oldr2 = 0
set $oldr3 = 0
set $oldr4 = 0
set $oldr5 = 0
set $oldr6 = 0
set $oldr7 = 0
set $oldsp = 0
set $oldlr = 0

# used by ptraceme/rptraceme
set $ptrace_bpnum = 0

# _____ window size control _____
define contextszie-stack
    if $argc != 1
        help contextszie-stack
    else
        set $CONTEXTSIZE_STACK = $arg0
    end
end
document contextszie-stack
Syntax: contextszie-stack NUM
| Set stack dump window size to NUM lines.
end

define contextszie-data

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if $argc != 1
    help contextsize-data
else
    set $CONTEXTSIZE_DATA = $arg0
end
end
document contextsize-data
Syntax: contextsize-data NUM
| Set data dump window size to NUM lines.

define contextsize-code
if $argc != 1
    help contextsize-code
else
    set $CONTEXTSIZE_CODE = $arg0
end
end
document contextsize-code
Syntax: contextsize-code NUM
| Set code window size to NUM lines.
end

# _____breakpoint aliases_____
define bpl
    info breakpoints
end
document bpl
Syntax: bpl
| List all breakpoints.
end

define bp
if $argc != 1
    help bp
else
    break $arg0
end
end
document bp
Syntax: bp LOCATION
| Set breakpoint.
| LOCATION may be a line number, function name, or "*" and an address.
| To break on a symbol you must enclose symbol name inside "".
| Example:
| bp "[NSControl stringValue]"
| Or else you can use directly the break command (break [NSControl stringValue])
end

define bpc
if $argc != 1
    help bpc
else
    clear $arg0
end

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```
end
document bpc
Syntax: bpc LOCATION
| Clear breakpoint.
| LOCATION may be a line number, function name, or "*" and an address.
end
```

```
define bpe
  if $argc != 1
    help bpe
  else
    enable $arg0
  end
end
document bpe
Syntax: bpe NUM
| Enable breakpoint with number NUM.
end
```

```
define bpd
  if $argc != 1
    help bpd
  else
    disable $arg0
  end
end
document bpd
Syntax: bpd NUM
| Disable breakpoint with number NUM.
end
```

```
define bpt
  if $argc != 1
    help bpt
  else
    tbreak $arg0
  end
end
document bpt
Syntax: bpt LOCATION
| Set a temporary breakpoint.
| This breakpoint will be automatically deleted when hit!.
| LOCATION may be a line number, function name, or "*" and an address.
end
```

```
define bpm
  if $argc != 1
    help bpm
  else
    awatch $arg0
  end
end
document bpm
Syntax: bpm EXPRESSION
| Set a read/write breakpoint on EXPRESSION, e.g. *address.
```

```
end

define bhb
  if $argc != 1
    help bhb
  else
    hb $arg0
  end
end
document bhb
Syntax: bhb LOCATION
| Set hardware assisted breakpoint.
| LOCATION may be a line number, function name, or "*" and an address.
end
```

```
define bht
  if $argc != 1
    help bht
  else
    thbreak $arg0
  end
end
document bht
Usage: bht LOCATION
| Set a temporary hardware breakpoint.
| This breakpoint will be automatically deleted when hit!
| LOCATION may be a line number, function name, or "*" and an address.
end
```

```
# _____process information_____
define argv
  show args
end
document argv
Syntax: argv
| Print program arguments.
end
```

```
define stack
  if $argc == 0
    info stack
  end
  if $argc == 1
    info stack $arg0
  end
  if $argc > 1
    help stack
  end
end
document stack
Syntax: stack <COUNT>
| Print backtrace of the call stack, or innermost COUNT frames.
end
```

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define frame
    info frame
    info args
    info locals
end
document frame
Syntax: frame
| Print stack frame.
end

define flagsarm
# conditional flags are
# negative/less than (N), bit 31 of CPSR
# zero (Z), bit 30
# Carry/Borrow/Extend (C), bit 29
# Overflow (V), bit 28
    # negative/less than (N), bit 31 of CPSR
    if (($cpsr >> 0x1f) & 1)
        printf "N "
        set $_n_flag = 1
    else
        printf "n "
        set $_n_flag = 0
    end
    # zero (Z), bit 30
    if (($cpsr >> 0x1e) & 1)
        printf "Z "
        set $_z_flag = 1
    else
        printf "z "
        set $_z_flag = 0
    end
    # Carry/Borrow/Extend (C), bit 29
    if (($cpsr >> 0x1d) & 1)
        printf "C "
        set $_c_flag = 1
    else
        printf "c "
        set $_c_flag = 0
    end
    # Overflow (V), bit 28
    if (($cpsr >> 0x1c) & 1)
        printf "V "
        set $_v_flag = 1
    else
        printf "v "
        set $_v_flag = 0
    end
    # Sticky overflow (Q), bit 27
    if (($cpsr >> 0x1b) & 1)
        printf "Q "
        set $_q_flag = 1
    else
        printf "q "
        set $_q_flag = 0
    end
    # Java state bit (J), bit 24
    # When T=1:

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# J = 0 The processor is in Thumb state.
# J = 1 The processor is in ThumbEE state.
if (($cpsr >> 0x18) & 1)
    printf "J "
    set $_j_flag = 1
else
    printf "j "
    set $_j_flag = 0
end
# Data endianness bit (E), bit 9
if (($cpsr >> 9) & 1)
    printf "E "
    set $_e_flag = 1
else
    printf "e "
    set $_e_flag = 0
end
# Imprecise abort disable bit (A), bit 8
# The A bit is set to 1 automatically. It is used to disable imprecise data
aborts.
# It might not be writable in the Nonsecure state if the AW bit in the SCR
register is reset.
if (($cpsr >> 8) & 1)
    printf "A "
    set $_a_flag = 1
else
    printf "a "
    set $_a_flag = 0
end
# IRQ disable bit (I), bit 7
# When the I bit is set to 1, IRQ interrupts are disabled.
if (($cpsr >> 7) & 1)
    printf "I "
    set $_i_flag = 1
else
    printf "i "
    set $_i_flag = 0
end
# FIQ disable bit (F), bit 6
# When the F bit is set to 1, FIQ interrupts are disabled.
# FIQ can be nonmaskable in the Nonsecure state if the FW bit in SCR register
is reset.
if (($cpsr >> 6) & 1)
    printf "F "
    set $_f_flag = 1
else
    printf "f "
    set $_f_flag = 0
end
# Thumb state bit (F), bit 5
# if 1 then the processor is executing in Thumb state or ThumbEE state
depending on the J bit
if (($cpsr >> 5) & 1)
    printf "T "
    set $_t_flag = 1
else
    printf "t "
    set $_t_flag = 0
end

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# TODO: GE bit ?
end
document flagsarm
Syntax: flagsarm
| Auxiliary function to set ARM cpu flags.
end

define flagsx86
    # OF (overflow) flag
    if (((unsigned int)$eflags >> 0xB) & 1)
        printf "0 "
        set $_of_flag = 1
    else
        printf "o "
        set $_of_flag = 0
    end
    # DF (direction) flag
    if (((unsigned int)$eflags >> 0xA) & 1)
        printf "D "
    else
        printf "d "
    end
    # IF (interrupt enable) flag
    if (((unsigned int)$eflags >> 9) & 1)
        printf "I "
    else
        printf "i "
    end
    # TF (trap) flag
    if (((unsigned int)$eflags >> 8) & 1)
        printf "T "
    else
        printf "t "
    end
    # SF (sign) flag
    if (((unsigned int)$eflags >> 7) & 1)
        printf "S "
        set $_sf_flag = 1
    else
        printf "s "
        set $_sf_flag = 0
    end
    # ZF (zero) flag
    if (((unsigned int)$eflags >> 6) & 1)
        printf "Z "
        set $_zf_flag = 1
    else
        printf "z "
        set $_zf_flag = 0
    end
    # AF (adjust) flag
    if (((unsigned int)$eflags >> 4) & 1)
        printf "A "
    else
        printf "a "
    end
    # PF (parity) flag
    if (((unsigned int)$eflags >> 2) & 1)

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        printf "P "
        set $_pf_flag = 1
    else
        printf "p "
        set $_pf_flag = 0
    end
    # CF (carry) flag
    if ((unsigned int)$eflags & 1)
        printf "C "
        set $_cf_flag = 1
    else
        printf "c "
        set $_cf_flag = 0
    end
    printf "\n"
end
document flagsx86
Syntax: flagsx86
| Auxiliary function to set X86/X64 cpu flags.
end

define flags
    # call the auxiliary functions based on target cpu
    if $ARM == 1
        flagsarm
    else
        flagsx86
    end
end
document flags
Syntax: flags
| Print flags register.
end

define eflags
    if $ARM == 1
        # http://www.heyrick.co.uk/armwiki/The_Status_register
        printf "      N <%d>  Z <%d>  C <%d>  V <%d>,\n
                (($cpr >> 0x1f) & 1),  (($cpr >> 0x1e) & 1), \
                (($cpr >> 0x1d) & 1),  (($cpr >> 0x1c) & 1)
        printf "      Q <%d>  J <%d>  GE <%d>  E <%d>  A <%d>,\n
                (($cpr >> 0x1b) & 1),  (($cpr >> 0x18) & 1), \
                (($cpr >> 0x10) & 7),  (($cpr >> 9) & 1),  (($cpr >> 8) & 1)
        printf "      I <%d>  F <%d>  T <%d>  \n",
                (($cpr >> 7) & 1),  (($cpr >> 6) & 1), \
                (($cpr >> 5) & 1)
    else
        printf "      OF <%d>  DF <%d>  IF <%d>  TF <%d>,\n
                (((unsigned int)$eflags >> 0xB) & 1),  (((unsigned int)$eflags >>
0xA) & 1), \
                (((unsigned int)$eflags >> 9) & 1),  (((unsigned int)$eflags >> 8) &
1)
        printf "      SF <%d>  ZF <%d>  AF <%d>  PF <%d>  CF <%d>\n",
                (((unsigned int)$eflags >> 7) & 1),  (((unsigned int)$eflags >> 6) &
1), \
                (((unsigned int)$eflags >> 4) & 1),  (((unsigned int)$eflags >> 2) &
1),  ((unsigned int)$eflags & 1)
    end
end

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        printf "    ID <%d>  VIP <%d> VIF <%d> AC <%d>", \
               (((unsigned int)$eflags >> 0x15) & 1), (((unsigned int)$eflags >>
0x14) & 1), \
               (((unsigned int)$eflags >> 0x13) & 1), (((unsigned int)$eflags >>
0x12) & 1)
        printf "  VM <%d>  RF <%d>  NT <%d>  IOPL <%d>\n", \
               (((unsigned int)$eflags >> 0x11) & 1), (((unsigned int)$eflags >>
0x10) & 1), \
               (((unsigned int)$eflags >> 0xE) & 1), (((unsigned int)$eflags >>
0xC) & 3)
        end
end
document eflags
Syntax: eflags
| Print eflags register.
end

define cpsr
    eflags
end
document cpsr
Syntax: cpsr
| Print cpsr register.
end

define regarm
    printf " "
    # R0
    color $COLOR_REGNAME
    printf "R0:"
    if ($r0 != $oldr0 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
    else
        color $COLOR_REGVAL
    end
    printf " 0x%08X ", $r0
    # R1
    color $COLOR_REGNAME
    printf "R1:"
    if ($r1 != $oldr1 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
    else
        color $COLOR_REGVAL
    end
    printf " 0x%08X ", $r1
    # R2
    color $COLOR_REGNAME
    printf "R2:"
    if ($r2 != $oldr2 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
    else
        color $COLOR_REGVAL
    end
    printf " 0x%08X ", $r2
    # R3
    color $COLOR_REGNAME
    printf "R3:"
    if ($r3 != $oldr3 && $SHOWREGCHANGES == 1)

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        color $COLOR_REGVAL_MODIFIED
else
        color $COLOR_REGVAL
end
printf " 0x%08X\n", $r3
printf " "
# R4
color $COLOR_REGNAME
printf "R4:"
if ($r4 != $oldr4 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
else
        color $COLOR_REGVAL
end
printf " 0x%08X  ", $r4
# R5
color $COLOR_REGNAME
printf "R5:"
if ($r5 != $oldr5 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
else
        color $COLOR_REGVAL
end
printf " 0x%08X  ", $r5
# R6
color $COLOR_REGNAME
printf "R6:"
if ($r6 != $oldr6 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
else
        color $COLOR_REGVAL
end
printf " 0x%08X  ", $r6
# R7
color $COLOR_REGNAME
printf "R7:"
if ($r7 != $oldr7 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
else
        color $COLOR_REGVAL
end
printf " 0x%08X\n", $r7
printf " "
# R8
color $COLOR_REGNAME
printf "R8:"
if ($r8 != $oldr8 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
else
        color $COLOR_REGVAL
end
printf " 0x%08X  ", $r8
# R9
color $COLOR_REGNAME
printf "R9:"
if ($r9 != $oldr9 && $SHOWREGCHANGES == 1)
        color $COLOR_REGVAL_MODIFIED
else
        color $COLOR_REGVAL

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end
printf " 0x%08X  ", $r9
  # R10
color $COLOR_REGNAME
printf "R10:"
if ($r10 != $oldr10 && $SHOWREGCHANGES == 1)
  color $COLOR_REGVAL_MODIFIED
else
  color $COLOR_REGVAL
end
printf " 0x%08X  ", $r10
  # R11
color $COLOR_REGNAME
printf "R11:"
if ($r11 != $oldr11 && $SHOWREGCHANGES == 1)
  color $COLOR_REGVAL_MODIFIED
else
  color $COLOR_REGVAL
end
printf " 0x%08X ", $r11
dumpjump
printf "\n"
# R12
color $COLOR_REGNAME
printf "  R12:"
if ($r12 != $oldr12 && $SHOWREGCHANGES == 1)
  color $COLOR_REGVAL_MODIFIED
else
  color $COLOR_REGVAL
end
printf " 0x%08X", $r12
printf "  "
# SP
color $COLOR_REGNAME
printf "SP:"
if ($sp != $oldsp && $SHOWREGCHANGES == 1)
  color $COLOR_REGVAL_MODIFIED
else
  color $COLOR_REGVAL
end
printf " 0x%08X  ", $sp
  # LR
color $COLOR_REGNAME
printf "LR:"
if ($lr != $oldlr && $SHOWREGCHANGES == 1)
  color $COLOR_REGVAL_MODIFIED
else
  color $COLOR_REGVAL
end
printf " 0x%08X  ", $lr
  # PC
color $COLOR_REGNAME
printf "PC:"
color $COLOR_REGVAL_MODIFIED
printf " 0x%08X  ", $pc
color_bold
color_underline
color $COLOR_CPUFLAGS
flags

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        color_reset
printf "\n"
end
document regarm
Syntax: regarm
| Auxiliary function to display ARM registers.
end

define regex64
# 64bits stuff
printf " "
# RAX
color $COLOR_REGNAME
printf "RAX:"
if ($rax != $oldrax && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $rax
# RBX
color $COLOR_REGNAME
printf "RBX:"
if ($rbx != $oldrbx && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $rbx
# RBP
color $COLOR_REGNAME
printf "RBP:"
if ($rbp != $oldrbp && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $rbp
# RSP
color $COLOR_REGNAME
printf "RSP:"
if ($rsp != $oldrsp && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $rsp
color_bold
color_underline
color $COLOR_CPUFLAGS
flags
color_reset
printf " "
# RDI
color $COLOR_REGNAME
printf "RDI:"
if ($rdi != $oldrdi && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else

```

```

        color $COLOR_REGVAL
end
printf " 0x%016lX ", $rdi
# RSI
color $COLOR_REGNAME
printf "RSI:"
if ($rsi != $oldrsi && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $rsi
# RDX
color $COLOR_REGNAME
printf "RDX:"
if ($rdx != $oldrdx && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $rdx
# RCX
color $COLOR_REGNAME
printf "RCX:"
if ($rcx != $oldrcx && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $rcx
# RIP
color $COLOR_REGNAME
printf "RIP:"
color $COLOR_REGVAL_MODIFIED
printf " 0x%016lX\n ", $rip
# R8
color $COLOR_REGNAME
printf "R8 :"
if ($r8 != $oldr8 && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $r8
# R9
color $COLOR_REGNAME
printf "R9 :"
if ($r9 != $oldr9 && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX ", $r9
# R10
color $COLOR_REGNAME
printf "R10:"
if ($r10 != $oldr10 && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else

```

```
        color $COLOR_REGVAL
end
printf " 0x%016lX  ", $r10
# R11
color $COLOR_REGNAME
printf "R11:"
if ($r11 != $oldr11 && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX  ", $r11
# R12
color $COLOR_REGNAME
printf "R12:"
if ($r12 != $oldr12 && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX\n  ", $r12
# R13
color $COLOR_REGNAME
printf "R13:"
if ($r13 != $oldr13 && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX  ", $r13
# R14
color $COLOR_REGNAME
printf "R14:"
if ($r14 != $oldr14 && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX  ", $r14
# R15
color $COLOR_REGNAME
printf "R15:"
if ($r15 != $oldr15 && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%016lX\n  ", $r15
color $COLOR_REGNAME
printf "CS:"
color $COLOR_REGVAL
printf " %04X  ", $cs
color $COLOR_REGNAME
printf "DS:"
color $COLOR_REGVAL
printf " %04X  ", $ds
color $COLOR_REGNAME
printf "ES:"
color $COLOR_REGVAL
```

```

printf " %04X ", $es
color $COLOR_REGNAME
printf "FS:"
color $COLOR_REGVAL
printf " %04X ", $fs
color $COLOR_REGNAME
printf "GS:"
color $COLOR_REGVAL
printf " %04X ", $gs
color $COLOR_REGNAME
printf "SS:"
color $COLOR_REGVAL
printf " %04X", $ss
color_reset
end
document regex64
Syntax: regex64
| Auxiliary function to display X86_64 registers.
end

```

```

define regex86
printf " "
# EAX
color $COLOR_REGNAME
printf "EAX:"
if ($eax != $oldeax && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%08X ", $eax
# EBX
color $COLOR_REGNAME
printf "EBX:"
if ($ebx != $oldebx && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%08X ", $ebx
# ECX
color $COLOR_REGNAME
printf "ECX:"
if ($ecx != $oldecx && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%08X ", $ecx
# EDX
color $COLOR_REGNAME
printf "EDX:"
if ($edx != $oldedx && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%08X ", $edx

```

```

color_bold
color_underline
color $COLOR_CPUFLAGS
flags
color_reset
printf " "
# ESI
color $COLOR_REGNAME
printf "ESI:"
if ($esi != $oldesi && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%08X ", $esi
# EDI
color $COLOR_REGNAME
printf "EDI:"
if ($edi != $oldedi && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%08X ", $edi
# EBP
color $COLOR_REGNAME
printf "EBP:"
if ($ebp != $oldebp && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%08X ", $ebp
# ESP
color $COLOR_REGNAME
printf "ESP:"
if ($esp != $oldesp && $SHOWREGCHANGES == 1)
    color $COLOR_REGVAL_MODIFIED
else
    color $COLOR_REGVAL
end
printf " 0x%08X ", $esp
# EIP
color $COLOR_REGNAME
printf "EIP:"
color $COLOR_REGVAL_MODIFIED
printf " 0x%08X\n ", $eip
color $COLOR_REGNAME
printf "CS:"
color $COLOR_REGVAL
printf " %04X ", $cs
color $COLOR_REGNAME
printf "DS:"
color $COLOR_REGVAL
printf " %04X ", $ds
color $COLOR_REGNAME
printf "ES:"
color $COLOR_REGVAL
printf " %04X ", $es

```

```

color $COLOR_REGNAME
printf "FS:"
color $COLOR_REGVAL
printf " %04X ", $fs
color $COLOR_REGNAME
printf "GS:"
color $COLOR_REGVAL
printf " %04X ", $gs
color $COLOR_REGNAME
printf "SS:"
color $COLOR_REGVAL
printf " %04X", $ss
color_reset
end
document regx86
Syntax: regx86
| Auxiliary function to display X86 registers.
end

define reg
  if $ARM == 1
    regarm
    if ($SHOWREGCHANGES == 1)
      set $oldr0  = $r0
      set $oldr1  = $r1
      set $oldr2  = $r2
      set $oldr3  = $r3
      set $oldr4  = $r4
      set $oldr5  = $r5
      set $oldr6  = $r6
      set $oldr7  = $r7
      set $oldr8  = $r8
      set $oldr9  = $r9
      set $oldr10 = $r10
      set $oldr11 = $r11
      set $oldr12 = $r12
      set $oldsp  = $sp
      set $oldlr  = $lr
    end
  else
    if ($64BITS == 1)
      regx64
    else
      regx86
    end
    # call smallregisters
    smallregisters
    # display conditional jump routine
    if ($64BITS == 1)
      printf "\t\t\t\t\t"
    end
    dumpjump
    printf "\n"
    if ($SHOWREGCHANGES == 1)
      if ($64BITS == 1)
        set $oldrax = $rax
        set $oldrbx = $rbx
        set $oldrcx = $rcx

```

```

        set $oldrdx = $rdx
        set $oldrsi = $rsi
        set $oldrdi = $rdi
        set $oldrbp = $rbp
        set $oldrsp = $rsp
            set $oldr8  = $r8
        set $oldr9  = $r9
        set $oldr10 = $r10
        set $oldr11 = $r11
            set $oldr12 = $r12
        set $oldr13 = $r13
        set $oldr14 = $r14
        set $oldr15 = $r15
    else
        set $oldeax = $eax
        set $oldebx = $ebx
            set $oldecx = $ecx
        set $oldedx = $edx
        set $oldesi = $esi
        set $oldedi = $edi
            set $oldebp = $ebp
        set $oldesp = $esp
    end
end
end
end
document reg
Syntax: reg
| Print CPU registers.
end

```

```

define smallregisters
if ($64BITS == 1)
#64bits stuff
    # from rax
    set $eax = $rax & 0xffffffff
    set $ax  = $rax & 0xffff
    set $al  = $ax & 0xff
    set $ah  = $ax >> 8
    # from rbx
    set $ebx = $rbx & 0xffffffff
    set $bx  = $rbx & 0xffff
    set $bl  = $bx & 0xff
    set $bh  = $bx >> 8
    # from rcx
    set $ecx = $rcx & 0xffffffff
    set $cx  = $rcx & 0xffff
    set $cl  = $cx & 0xff
        set $ch  = $cx >> 8
    # from rdx
    set $edx = $rdx & 0xffffffff
    set $dx  = $rdx & 0xffff
    set $dl  = $dx & 0xff
    set $dh  = $dx >> 8
    # from rsi
    set $esi = $rsi & 0xffffffff
    set $si  = $rsi & 0xffff
    # from rdi

```

```

set $edi = $rdi & 0xffffffff
set $di = $rdi & 0xffff
#32 bits stuff
else
    # from eax
    set $ax = $eax & 0xffff
    set $al = $ax & 0xff
    set $ah = $ax >> 8
    # from ebx
    set $bx = $ebx & 0xffff
    set $bl = $bx & 0xff
    set $bh = $bx >> 8
    # from ecx
    set $cx = $ecx & 0xffff
    set $cl = $cx & 0xff
    set $ch = $cx >> 8
    # from edx
    set $dx = $edx & 0xffff
    set $dl = $dx & 0xff
        set $dh = $dx >> 8
    # from esi
    set $si = $esi & 0xffff
    # from edi
        set $di = $edi & 0xffff
end
end
document smallregisters
Syntax: smallregisters
| Create the 16 and 8 bit cpu registers (gdb doesn't have them by default).
| And 32bits if we are dealing with 64bits binaries.
end

define func
    if $argc == 0
        info functions
    end
    if $argc == 1
        info functions $arg0
    end
    if $argc > 1
        help func
    end
end
document func
Syntax: func <REGEXP>
| Print all function names in target, or those matching REGEXP.
end

define var
    if $argc == 0
        info variables
    end
    if $argc == 1
        info variables $arg0
    end
    if $argc > 1
        help var

```

```

        end
end
document var
Syntax: var <REGEXP>
| Print all global and static variable names (symbols), or those matching REGEXP.
end

define lib
    info sharedlibrary
end
document lib
Syntax: lib
| Print shared libraries linked to target.
end

define sig
    if $argc == 0
        info signals
    end
    if $argc == 1
        info signals $arg0
    end
    if $argc > 1
        help sig
    end
end
document sig
Syntax: sig <SIGNAL>
| Print what debugger does when program gets various signals.
| Specify a SIGNAL as argument to print info on that signal only.
end

define threads
    info threads
end
document threads
Syntax: threads
| Print threads in target.
end

define dis
    if $argc == 0
        disassemble
    end
    if $argc == 1
        disassemble $arg0
    end
    if $argc == 2
        disassemble $arg0 $arg1
    end
    if $argc > 2
        help dis
    end
end
document dis

```

```

Syntax: dis <ADDR1> <ADDR2>
| Disassemble a specified section of memory.
| Default is to disassemble the function surrounding the PC (program counter) of
selected frame.
| With one argument, ADDR1, the function surrounding this address is dumped.
| Two arguments are taken as a range of memory to dump.
end

```

```

# _____hex/ascii dump an address_____
define ascii_char
  if $argc != 1
    help ascii_char
  else
    # thanks elaine :)
    set $_c = *(unsigned char *)($arg0)
    if ($_c < 0x20 || $_c > 0x7E)
      printf "."
    else
      printf "%c", $_c
    end
  end
end
document ascii_char
Syntax: ascii_char ADDR
| Print ASCII value of byte at address ADDR.
| Print "." if the value is unprintable.
end

define hex_quad
  if $argc != 1
    help hex_quad
  else
    printf "%02X %02X %02X %02X %02X %02X %02X", \
      *(unsigned char*)($arg0), *(unsigned char*)($arg0 + 1), \
      *(unsigned char*)($arg0 + 2), *(unsigned char*)($arg0 + 3), \
      *(unsigned char*)($arg0 + 4), *(unsigned char*)($arg0 + 5), \
      *(unsigned char*)($arg0 + 6), *(unsigned char*)($arg0 + 7)
  end
end
document hex_quad
Syntax: hex_quad ADDR
| Print eight hexadecimal bytes starting at address ADDR.
end

define hexdump
  if $argc == 1
    hexdump_aux $arg0
  else
    if $argc == 2
      set $_count = 0
      while ($_count < $arg1)
        set $_i = ($_count * 0x10)
        hexdump_aux $arg0+$_i
        set $_count++
      end
    else

```

```

        help hexdump
    end
end
document hexdump
Syntax: hexdump ADDR <NR_LINES>
| Display a 16-byte hex/ASCII dump of memory starting at address ADDR.
| Optional parameter is the number of lines to display if you want more than one.
end

define hexdump_aux
if $argc != 1
    help hexdump_aux
else
    color_bold
    if ($64BITS == 1)
        printf "0x%016lx : ", $arg0
    else
        printf "0x%08x : ", $arg0
    end
    color_reset
    hex_quad $arg0
    color_bold
    printf " - "
    color_reset
    hex_quad $arg0+8
    printf " "
    color_bold
    ascii_char $arg0+0x0
    ascii_char $arg0+0x1
    ascii_char $arg0+0x2
    ascii_char $arg0+0x3
    ascii_char $arg0+0x4
    ascii_char $arg0+0x5
    ascii_char $arg0+0x6
    ascii_char $arg0+0x7
    ascii_char $arg0+0x8
    ascii_char $arg0+0x9
    ascii_char $arg0+0xA
    ascii_char $arg0+0xB
    ascii_char $arg0+0xC
    ascii_char $arg0+0xD
    ascii_char $arg0+0xE
    ascii_char $arg0+0xF
    color_reset
    printf "\n"
end
end
document hexdump_aux
Syntax: hexdump_aux ADDR
| Display a 16-byte hex/ASCII dump of memory at address ADDR.
end

```

```

# _____data window_____
define ddump
if $argc != 1
    help ddump

```

```

else
    color $COLOR_SEPARATOR
    if $ARM == 1
        printf "[0x%08X]", $data_addr
    else
        if ($64BITS == 1)
            printf "[0x%04X:0x%016lX]", $ds, $data_addr
        else
            printf "[0x%04X:0x%08X]", $ds, $data_addr
        end
    end

    color $COLOR_SEPARATOR
    printf "-----"
    printf "-----"
    if ($64BITS == 1)
        printf "-----"
    end
    color_bold
    color $COLOR_SEPARATOR
    printf "[data]\n"
    color_reset
    set $_count = 0
    while ($_count < $arg0)
        set $_i = ($_count * 0x10)
        hexdump $data_addr+$_i
        set $_count++
    end
end
document ddump
Syntax: ddump NUM
| Display NUM lines of hexdump for address in $data_addr global variable.
end

define dd
    if $argc != 1
        help dd
    else
        set $data_addr = $arg0
        ddump 0x10
    end
end
document dd
Syntax: dd ADDR
| Display 16 lines of a hex dump of address starting at ADDR.
end

define datawin
    if $ARM == 1
        if (((r0 >> 0x18) == 0x40) || ((r0 >> 0x18) == 0x08) || ((r0 >> 0x18) == 0xBF))
            set $data_addr = $r0
        else
            if (((r1 >> 0x18) == 0x40) || ((r1 >> 0x18) == 0x08) || ((r1 >> 0x18) == 0xBF))
                set $data_addr = $r1

```

```

        else
            if (((($r2 >> 0x18) == 0x40) || (($r2 >> 0x18) == 0x08) || (($r2 >>
0x18) == 0xBF))
                set $data_addr = $r2
            else
                set $data_addr = $sp
            end
        end
    end
#####
##### X86
else
    if ($64BITS == 1)
        if (((($rsi >> 0x18) == 0x40) || (($rsi >> 0x18) == 0x08) || (($rsi >>
0x18) == 0xBF))
            set $data_addr = $rsi
        else
            if (((($rdi >> 0x18) == 0x40) || (($rdi >> 0x18) == 0x08) || (($rdi
>> 0x18) == 0xBF))
                set $data_addr = $rdi
            else
                if (((($rax >> 0x18) == 0x40) || (($rax >> 0x18) == 0x08) ||
($rax >> 0x18) == 0xBF))
                    set $data_addr = $rax
                else
                    set $data_addr = $rsp
                end
            end
        end
    else
        if (((($esi >> 0x18) == 0x40) || (($esi >> 0x18) == 0x08) || (($esi >>
0x18) == 0xBF))
            set $data_addr = $esi
        else
            if (((($edi >> 0x18) == 0x40) || (($edi >> 0x18) == 0x08) || (($edi
>> 0x18) == 0xBF))
                set $data_addr = $edi
            else
                if (((($eax >> 0x18) == 0x40) || (($eax >> 0x18) == 0x08) ||
($eax >> 0x18) == 0xBF))
                    set $data_addr = $eax
                else
                    set $data_addr = $esp
                end
            end
        end
    end
end
ddump $CONTEXTSIZE_DATA
end
document datawin
Syntax: datawin
| Display valid address from one register in data window.
| Registers to choose are: esi, edi, eax, or esp.
end

#####
##### ALERT ALERT ALERT #####
#####

```

```

# Huge mess going here :) HAHA #
#####
define dumpjump
    if $ARM == 1
        ## Most ARM and Thumb instructions are conditional!
        # each instruction is 32 bits long
        # 4 bits are for condition codes (16 in total) (bits 31:28 in ARM contain
the condition or 1111 if instruction is unconditional)
        # 2x4 bits for destination and first operand registers
        # one for the set-status flag
        # an assorted number for other stuff
        # 12 bits for any immediate value
        # $_t_flag == 0 => ARM mode
        # $_t_flag == 1 => Thumb or ThumbEE
        # State bit (T), bit 5
        if (($cpsr >> 5) & 1)
            set $_t_flag = 1
        else
            set $_t_flag = 0
        end

        if $_t_flag == 0
            set $_lastbyte = *(unsigned char *)($pc+3)
            #set $_bit31 = ($_lastbyte >> 7) & 1
            #set $_bit30 = ($_lastbyte >> 6) & 1
            #set $_bit29 = ($_lastbyte >> 5) & 1
            #set $_bit28 = ($_lastbyte >> 4) & 1
            set $_conditional = $_lastbyte >> 4
            dumpjumphelper
        else
            # if bits 15-12 (opcode in Thumb instructions) are equal to 1 1 0 1
            # (0xD) then we have a conditional branch
            # bits 11-8 for the conditional execution code (check ARMv7 manual
A8.3)
            if ( (*(unsigned char *)($pc+1) >> 4) == 0xD )
                set $_conditional = *(unsigned char *)($pc+1) ^ 0xD0
                dumpjumphelper
            end
        end
    #####
    # X86
    else
        ## grab the first two bytes from the instruction so we can determine the
jump instruction
        set $_byte1 = *(unsigned char *)$pc
        set $_byte2 = *(unsigned char *)($pc+1)
        ## and now check what kind of jump we have (in case it's a jump
instruction)
        ## I changed the flags routine to save the flag into a variable, so we
don't need to repeat the process :) (search for "define flags")

        ## opcode 0x77: JA, JNBE (jump if CF=0 and ZF=0)
        ## opcode 0x0F87: JNBE, JA
        if ( ($_byte1 == 0x77) || ($_byte1 == 0x0F && $_byte2 == 0x87) )
            # cf=0 and zf=0
            if ($_cf_flag == 0 && $_zf_flag == 0)
                color $RED
                printf "  Jump is taken (c=0 and z=0)"
            else
                # cf != 0 or zf != 0

```

```

        color $RED
        printf "  Jump is NOT taken (c!=0 or z!=0)"
    end
end
## opcode 0x73: JAE, JNB, JNC (jump if CF=0)
## opcode 0x0F83: JNC, JNB, JAE (jump if CF=0)
if ( ($_byte1 == 0x73) || ($_byte1 == 0x0F && $_byte2 == 0x83) )
    # cf=0
    if ($_cf_flag == 0)
        color $RED
        printf "  Jump is taken (c=0)"
    else
        # cf != 0
        color $RED
        printf "  Jump is NOT taken (c!=0)"
    end
end
## opcode 0x72: JB, JC, JNAE (jump if CF=1)
## opcode 0x0F82: JNAE, JB, JC
if ( ($_byte1 == 0x72) || ($_byte1 == 0x0F && $_byte2 == 0x82) )
    # cf=1
    if ($_cf_flag == 1)
        color $RED
        printf "  Jump is taken (c=1)"
    else
        # cf != 1
        color $RED
        printf "  Jump is NOT taken (c!=1)"
    end
end
## opcode 0x76: JBE, JNA (jump if CF=1 or ZF=1)
## opcode 0x0F86: JBE, JNA
if ( ($_byte1 == 0x76) || ($_byte1 == 0x0F && $_byte2 == 0x86) )
    # cf=1 or zf=1
    if (($_cf_flag == 1) || ($_zf_flag == 1))
        color $RED
        printf "  Jump is taken (c=1 or z=1)"
    else
        # cf != 1 or zf != 1
        color $RED
        printf "  Jump is NOT taken (c!=1 or z!=1)"
    end
end
## opcode 0xE3: JCXZ, JECXZ, JRCXZ (jump if CX=0 or ECX=0 or RCX=0)
if ($_byte1 == 0xE3)
    # cx=0 or ecx=0
    if (($ecx == 0) || ($cx == 0))
        color $RED
        printf "  Jump is taken (cx=0 or ecx=0)"
    else
        color $RED
        printf "  Jump is NOT taken (cx!=0 or ecx!=0)"
    end
end
## opcode 0x74: JE, JZ (jump if ZF=1)
## opcode 0x0F84: JZ, JE, JZ (jump if ZF=1)
if ( ($_byte1 == 0x74) || ($_byte1 == 0x0F && $_byte2 == 0x84) )
    # ZF = 1
    if ($_zf_flag == 1)

```

```

        color $RED
        printf "  Jump is taken (z=1)"
    else
        # ZF = 0
        color $RED
        printf "  Jump is NOT taken (z!=1)"
    end
end
## opcode 0x7F: JG, JNLE (jump if ZF=0 and SF=OF)
## opcode 0x0F8F: JNLE, JG (jump if ZF=0 and SF=OF)
if ( ($_byte1 == 0x7F) || ($_byte1 == 0x0F && $_byte2 == 0x8F) )
    # zf = 0 and sf = of
    if (($_zf_flag == 0) && ($_sf_flag == $_of_flag))
        color $RED
        printf "  Jump is taken (z=0 and s=o)"
    else
        color $RED
        printf "  Jump is NOT taken (z!=0 or s!=o)"
    end
end
## opcode 0x7D: JGE, JNL (jump if SF=OF)
## opcode 0x0F8D: JNL, JGE (jump if SF=OF)
if ( ($_byte1 == 0x7D) || ($_byte1 == 0x0F && $_byte2 == 0x8D) )
    # sf = of
    if ($_sf_flag == $_of_flag)
        color $RED
        printf "  Jump is taken (s=o)"
    else
        color $RED
        printf "  Jump is NOT taken (s!=o)"
    end
end
## opcode: 0x7C: JL, JNGE (jump if SF != OF)
## opcode: 0x0F8C: JNGE, JL (jump if SF != OF)
if ( ($_byte1 == 0x7C) || ($_byte1 == 0x0F && $_byte2 == 0x8C) )
    # sf != of
    if ($_sf_flag != $_of_flag)
        color $RED
        printf "  Jump is taken (s!=o)"
    else
        color $RED
        printf "  Jump is NOT taken (s=o)"
    end
end
## opcode 0x7E: JLE, JNG (jump if ZF = 1 or SF != OF)
## opcode 0x0F8E: JNG, JLE (jump if ZF = 1 or SF != OF)
if ( ($_byte1 == 0x7E) || ($_byte1 == 0x0F && $_byte2 == 0x8E) )
    # zf = 1 or sf != of
    if (($_zf_flag == 1) || ($_sf_flag != $_of_flag))
        color $RED
        printf "  Jump is taken (zf=1 or sf!=of)"
    else
        color $RED
        printf "  Jump is NOT taken (zf!=1 or sf=of)"
    end
end
## opcode 0x75: JNE, JNZ (jump if ZF = 0)
## opcode 0x0F85: JNE, JNZ (jump if ZF = 0)
if ( ($_byte1 == 0x75) || ($_byte1 == 0x0F && $_byte2 == 0x85) )

```

```

# ZF = 0
if ($_zf_flag == 0)
    color $RED
    printf "  Jump is taken (z=0)"
else
    # ZF = 1
    color $RED
    printf "  Jump is NOT taken (z!=0)"
end
## opcode 0x71: JNO (OF = 0)
## opcode 0x0F81: JNO (OF = 0)
if ( ($_byte1 == 0x71) || ($_byte1 == 0x0F && $_byte2 == 0x81) )
    # OF = 0
    if ($_of_flag == 0)
        color $RED
        printf "  Jump is taken (o=0)"
    else
        # OF != 0
        color $RED
        printf "  Jump is NOT taken (o!=0)"
    end
end
## opcode 0x7B: JNP, JPO (jump if PF = 0)
## opcode 0x0F8B: JPO (jump if PF = 0)
if ( ($_byte1 == 0x7B) || ($_byte1 == 0x0F && $_byte2 == 0x8B) )
    # PF = 0
    if ($_pf_flag == 0)
        color $RED
        printf "  Jump is NOT taken (p=0)"
    else
        # PF != 0
        color $RED
        printf "  Jump is taken (p!=0)"
    end
end
## opcode 0x79: JNS (jump if SF = 0)
## opcode 0x0F89: JNS (jump if SF = 0)
if ( ($_byte1 == 0x79) || ($_byte1 == 0x0F && $_byte2 == 0x89) )
    # SF = 0
    if ($_sf_flag == 0)
        color $RED
        printf "  Jump is taken (s=0)"
    else
        # SF != 0
        color $RED
        printf "  Jump is NOT taken (s!=0)"
    end
end
## opcode 0x70: JO (jump if OF=1)
## opcode 0x0F80: JO (jump if OF=1)
if ( ($_byte1 == 0x70) || ($_byte1 == 0x0F && $_byte2 == 0x80) )
    # OF = 1
    if ($_of_flag == 1)
        color $RED
        printf "  Jump is taken (o=1)"
    else
        # OF != 1
        color $RED

```

```

                printf "  Jump is NOT taken (o!=1)"
            end
        end
## opcode 0x7A: JP, JPE (jump if PF=1)
## opcode 0x0F8A: JP, JPE (jump if PF=1)
if ( ($_byte1 == 0x7A) || ($_byte1 == 0x0F && $_byte2 == 0x8A) )
    # PF = 1
    if ($_pf_flag == 1)
        color $RED
        printf "  Jump is taken (p=1)"
    else
        # PF = 0
        color $RED
        printf "  Jump is NOT taken (p!=1)"
    end
end
## opcode 0x78: JS (jump if SF=1)
## opcode 0x0F88: JS (jump if SF=1)
if ( ($_byte1 == 0x78) || ($_byte1 == 0x0F && $_byte2 == 0x88) )
    # SF = 1
    if ($_sf_flag == 1)
        color $RED
        printf "  Jump is taken (s=1)"
    else
        # SF != 1
        color $RED
        printf "  Jump is NOT taken (s!=1)"
    end
end
end
end
document dumpjump
Syntax: dumpjump
| Display if conditional jump will be taken or not.
end

define dumpjumphelper
# 0000 - EQ: Z == 1
if ($_conditional == 0x0)
    if ($_z_flag == 1)
        color $RED
        printf "  Jump is taken (z==1)"
    else
        color $RED
        printf "  Jump is NOT taken (z!=1)"
    end
end
# 0001 - NE: Z == 0
if ($_conditional == 0x1)
    if ($_z_flag == 0)
        color $RED
        printf "  Jump is taken (z==0)"
    else
        color $RED
        printf "  Jump is NOT taken (z!=0)"
    end
end
# 0010 - CS: C == 1
if ($_conditional == 0x2)

```

```

        if ($_c_flag == 1)
            color $RED
        printf " Jump is taken (c==1)"
    else
        color $RED
        printf " Jump is NOT taken (c!=1)"
    end
end
# 0011 - CC: C == 0
if ($_conditional == 0x3)
    if ($_c_flag == 0)
        color $RED
    printf " Jump is taken (c==0)"
else
    color $RED
    printf " Jump is NOT taken (c!=0)"
end
# 0100 - MI: N == 1
if ($_conditional == 0x4)
    if ($_n_flag == 1)
        color $RED
    printf " Jump is taken (n==1)"
else
    color $RED
    printf " Jump is NOT taken (n!=1)"
end
# 0101 - PL: N == 0
if ($_conditional == 0x5)
    if ($_n_flag == 0)
        color $RED
    printf " Jump is taken (n==0)"
else
    color $RED
    printf " Jump is NOT taken (n!=0)"
end
# 0110 - VS: V == 1
if ($_conditional == 0x6)
    if ($_v_flag == 1)
        color $RED
    printf " Jump is taken (v==1)"
else
    color $RED
    printf " Jump is NOT taken (v!=1)"
end
# 0111 - VC: V == 0
if ($_conditional == 0x7)
    if ($_v_flag == 0)
        color $RED
    printf " Jump is taken (v==0)"
else
    color $RED
    printf " Jump is NOT taken (v!=0)"
end
end
# 1000 - HI: C == 1 and Z == 0

```

```

if ($_conditional == 0x8)
    if ($_c_flag == 1 && $_z_flag == 0)
        color $RED
    printf " Jump is taken (c==1 and z==0)"
else
    color $RED
    printf " Jump is NOT taken (c!=1 or z!=0)"
end
end
# 1001 - LS: C == 0 or Z == 1
if ($_conditional == 0x9)
    if ($_c_flag == 0 || $_z_flag == 1)
        color $RED
    printf " Jump is taken (c==0 or z==1)"
else
    color $RED
    printf " Jump is NOT taken (c!=0 or z!=1)"
end
end
# 1010 - GE: N == V
if ($_conditional == 0xA)
    if ($_n_flag == $_v_flag)
        color $RED
    printf " Jump is taken (n==v)"
else
    color $RED
    printf " Jump is NOT taken (n!=v)"
end
end
# 1011 - LT: N != V
if ($_conditional == 0xB)
    if ($_n_flag != $_v_flag)
        color $RED
    printf " Jump is taken (n!=v)"
else
    color $RED
    printf " Jump is NOT taken (n==v)"
end
end
# 1100 - GT: Z == 0 and N == V
if ($_conditional == 0xC)
    if ($_z_flag == 0 && $_n_flag == $_v_flag)
        color $RED
    printf " Jump is taken (z==0 and n==v)"
else
    color $RED
    printf " Jump is NOT taken (z!=0 or n!=v)"
end
end
# 1101 - LE: Z == 1 or N != V
if ($_conditional == 0xD)
    if ($_z_flag == 1 || $_n_flag != $_v_flag)
        color $RED
    printf " Jump is taken (z==1 or n!=v)"
else
    color $RED
    printf " Jump is NOT taken (z!=1 or n==v)"
end
end

```

```

end
document dumpjumphelper
Syntax: dumpjumphelper
| Helper function to decide if conditional jump will be taken or not, for ARM and
Thumb.
end

# _____ process context _____
# initialize variable
set $displayobjectivec = 0

define context
    color $COLOR_SEPARATOR
    if $SHOWCPUREGISTERS == 1
        printf "-----"
        printf "-----"
        if ($64BITS == 1)
            printf "-----"
        end
        color $COLOR_SEPARATOR
        color_bold
        printf "[regs]\n"
        color_reset
        reg
        color $CYAN
    end
    if $SHOWSTACK == 1
        color $COLOR_SEPARATOR
        if $ARM == 1
            printf "[0x%08X]", $sp
        else
            if ($64BITS == 1)
                printf "[0x%04X:0x%016lX]", $ss, $rsp
            else
                printf "[0x%04X:0x%08X]", $ss, $esp
            end
        end
    end
    color $COLOR_SEPARATOR
    printf "-----"
    printf "-----"
    if ($64BITS == 1)
        printf "-----"
    end
    color $COLOR_SEPARATOR
    color_bold
    printf "[stack]\n"
    color_reset
    set $context_i = $CONTEXTSIZE_STACK
    while ($context_i > 0)
        set $context_t = $sp + 0x10 * ($context_i - 1)
        hexdump $context_t
        set $context_i--
    end
end
# show the objective C message being passed to msgSend
if $SHOWOBJECTIVEC == 1
    #FIXME: X64 and ARM
    # What a piece of crap that's going on here :)
```

```

# detect if it's the correct opcode we are searching for
if $ARM == 0
    set $__byte1 = *(unsigned char *)$pc
    set $__byte = *(int *)$pc
    if ($__byte == 0x4244489)
        set $objectivec = $eax
        set $displayobjectivec = 1
    end

    if ($__byte == 0x4245489)
        set $objectivec = $edx
    set $displayobjectivec = 1
    end

    if ($__byte == 0x4244c89)
        set $objectivec = $ecx
    set $displayobjectivec = 1
    end
else
    set $__byte1 = 0
end
# and now display it or not (we have no interest in having the info
displayed after the call)
if $__byte1 == 0xE8
    if $displayobjectivec == 1
        color $COLOR_SEPARATOR
        printf
"-----"
        if ($64BITS == 1)
            printf "-----"
        end
        color $COLOR_SEPARATOR
        color_bold
            printf "[ObjectiveC]\n"
        color_reset
        color $BLACK
            x/s $objectivec
        end
        set $displayobjectivec = 0
    end
    if $displayobjectivec == 1
        color $COLOR_SEPARATOR
        printf
"-----"
        if ($64BITS == 1)
            printf "-----"
        end
        color $COLOR_SEPARATOR
        color_bold
            printf "[ObjectiveC]\n"
        color_reset
        color $BLACK
            x/s $objectivec
        end
    end
    color_reset
# and this is the end of this little crap

if $SHOWDATAWIN == 1

```

```

        datawin
    end

    color $COLOR_SEPARATOR
    printf "-----"
"-----"
    if ($64BITS == 1)
        printf "-----"
    end
    color $COLOR_SEPARATOR
    color_bold
    printf "[code]\n"
    color_reset
    set $context_i = $CONTEXTSIZE_CODE
    if ($context_i > 0)
        if ($SETCOLOR1STLINE == 1)
            color $GREEN
            if ($ARM == 1)
                #           | $cpsr.t (Thumb flag)
                x/i (unsigned int)$pc | (($cpsr >> 5) & 1)
            else
                x/i $pc
            end
            color_reset
        else
            if ($ARM == 1)
                #           | $cpsr.t (Thumb flag)
                x/i (unsigned int)$pc | (($cpsr >> 5) & 1)
            else
                x/i $pc
            end
        end
        set $context_i--
    end
    while ($context_i > 0)
        x /i
        set $context_i--
    end
    color $COLOR_SEPARATOR
    printf "-----"
    printf "-----"
    if ($64BITS == 1)
        printf "-----\n"
    else
        printf "\n"
    end
    color_reset
end
document context
Syntax: context
| Print context window, i.e. regs, stack, ds:esi and disassemble cs:eip.
end

define context-on
    set $SHOW_CONTEXT = 1
    printf "Displaying of context is now ON\n"
end
document context-on

```

```
Syntax: context-on
| Enable display of context on every program break.
end
```

```
define context-off
    set $SHOW_CONTEXT = 0
    printf "Displaying of context is now OFF\n"
end
document context-off
Syntax: context-off
| Disable display of context on every program break.
end
```

```
# _____process control_____
define n
    if $argc == 0
        nexti
    end
    if $argc == 1
        nexti $arg0
    end
    if $argc > 1
        help n
    end
end
document n
Syntax: n <NUM>
| Step one instruction, but proceed through subroutine calls.
| If NUM is given, then repeat it NUM times or till program stops.
| This is alias for nexti.
end
```

```
define go
    if $argc == 0
        stepi
    end
    if $argc == 1
        stepi $arg0
    end
    if $argc > 1
        help go
    end
end
document go
Syntax: go <NUM>
| Step one instruction exactly.
| If NUM is given, then repeat it NUM times or till program stops.
| This is alias for stepi.
end
```

```
define pret
    finish
end
document pret
Syntax: pret
```

```

| Execute until selected stack frame returns (step out of current call).
| Upon return, the value returned is printed and put in the value history.
end

define init
    set $SHOW_NEST_INSN = 0
    tbreak _init
    r
end
document init
Syntax: init
| Run program and break on _init().
end

define start
    set $SHOW_NEST_INSN = 0
    tbreak _start
    r
end
document start
Syntax: start
| Run program and break on _start().
end

define sstart
    set $SHOW_NEST_INSN = 0
    tbreak __libc_start_main
    r
end
document sstart
Syntax: sstart
| Run program and break on __libc_start_main().
| Useful for stripped executables.
end

define main
    set $SHOW_NEST_INSN = 0
    tbreak main
    r
end
document main
Syntax: main
| Run program and break on main().
end

# FIXME64
##### WARNING ! WARNING !!
##### More more messy stuff starting !!!
##### I was thinking about how to do this and then it occurred to me that it could be as
simple as this ! :)
define stepoframework
    if $ARM == 1
        # bl and bx opcodes
        # bx Rn  => ARM bits 27-20: 0 0 0 1 0 0 1 0 , bits 7-4: 0 0 0 1 ; Thumb

```

```

bits: 15-7: 0 1 0 0 0 1 1 1 0
      # blx Rn => ARM bits 27-20: 0 0 0 1 0 0 1 0 , bits 7-4: 0 0 1 1 ; Thumb
bits: 15-7: 0 1 0 0 0 1 1 1
      # bl # => ARM bits 27-24: 1 0 1 1 ; Thumb bits: 15-11: 1 1 1 1 0
      # blx # => ARM bits 31-25: 1 1 1 1 1 0 1 ; Thumb bits: 15-11: 1 1 1 1 0
      set $_nextaddress = 0

# ARM Mode
if ($_t_flag == 0)
    set $_branchesint = *(unsigned int*)$pc
    set $_bit31 = ($_branchesint >> 0x1F) & 1
    set $_bit30 = ($_branchesint >> 0x1E) & 1
    set $_bit29 = ($_branchesint >> 0x1D) & 1
    set $_bit28 = ($_branchesint >> 0x1C) & 1
    set $_bit27 = ($_branchesint >> 0x1B) & 1
    set $_bit26 = ($_branchesint >> 0x1A) & 1
    set $_bit25 = ($_branchesint >> 0x19) & 1
    set $_bit24 = ($_branchesint >> 0x18) & 1
    set $_bit23 = ($_branchesint >> 0x17) & 1
    set $_bit22 = ($_branchesint >> 0x16) & 1
    set $_bit21 = ($_branchesint >> 0x15) & 1
    set $_bit20 = ($_branchesint >> 0x14) & 1
    set $_bit7 = ($_branchesint >> 0x7) & 1
    set $_bit6 = ($_branchesint >> 0x6) & 1
    set $_bit5 = ($_branchesint >> 0x5) & 1
    set $_bit4 = ($_branchesint >> 0x4) & 1

#      set $_lastbyte = *(unsigned char *)($pc+3)
#      set $_bits2724 = $_lastbyte & 0x1
#      set $_bits3128 = $_lastbyte >> 4
#      if ($_bits3128 == 0xF)
#          set $_bits2724 = $_lastbyte & 0xA
#          set $_bits2724 = $_bits2724 >> 1
#      end
#      set $_previousbyte = *(unsigned char *)($pc+2)
#      set $_bits2320 = $_previousbyte >> 4
#      printf "bits2724: %x bits2320: %x\n", $_bits2724, $_bits2320

if ($_bit27 == 0 && $_bit26 == 0 && $_bit25 == 0 && $_bit24 == 1 &&
$_bit23 == 0 && $_bit22 == 0 && $_bit21 == 1 && $_bit20 == 0 && $_bit7 == 0 &&
$_bit6 == 0 && $_bit5 == 0 && $_bit4 == 1)
    printf "Found a bx Rn\n"
    set $_nextaddress = $pc+0x4
end
if ($_bit27 == 0 && $_bit26 == 0 && $_bit25 == 0 && $_bit24 == 1 &&
$_bit23 == 0 && $_bit22 == 0 && $_bit21 == 1 && $_bit20 == 0 && $_bit7 == 0 &&
$_bit6 == 0 && $_bit5 == 1 && $_bit4 == 1)
    printf "Found a blx Rn\n"
    set $_nextaddress = $pc+0x4
end
if ($_bit27 == 1 && $_bit26 == 0 && $_bit25 == 1 && $_bit24 == 1)
    printf "Found a bl #\n"
    set $_nextaddress = $pc+0x4
end
if ($_bit31 == 1 && $_bit30 == 1 && $_bit29 == 1 && $_bit28 == 1 &&
$_bit27 == 1 && $_bit26 == 0 && $_bit25 == 1)
    printf "Found a blx #\n"
    set $_nextaddress = $pc+0x4
end

```

```

# Thumb Mode
else
    # 32 bits instructions in Thumb are divided into two half words
    set $_hw1 = *(unsigned short*)($pc)
    set $_hw2 = *(unsigned short*)($pc+2)

    # bl/blx (immediate)
    # hw1: bits 15-11: 1 1 1 1 0
    # hw2: bits 15-14: 1 1 ; BL bit 12: 1 ; BLX bit 12: 0
    if (($_hw1 >> 0xC) == 0xF && (($_hw1 >> 0xB) & 1) == 0)
        if ((($_hw2 >> 0xF) & 1) == 1) && ((($_hw2 >> 0xE) & 1) == 1)
    )
        set $_nextaddress = $pc+0x4
    end
end
# if we have found a call to bypass we set a temporary breakpoint on next
instruction and continue
if ($_nextaddress != 0)
    tbreak *$_nextaddress
    continue
    printf "[Step0] Next address will be %x\n", $_nextaddress
# else we just single step
else
    nexti
end
#####
##### X86
else
    ## we know that an opcode starting by 0xE8 has a fixed length
    ## for the 0xFF opcodes, we can enumerate what is possible to have
    # first we grab the first 3 bytes from the current program counter
    set $_byte1 = *(unsigned char *)$pc
    set $_byte2 = *(unsigned char *)($pc+1)
    set $_byte3 = *(unsigned char *)($pc+2)
    # and start the fun
    # if it's a 0xE8 opcode, the total instruction size will be 5 bytes
    # so we can simply calculate the next address and use a temporary
breakpoint ! Voila :)
    set $_nextaddress = 0
    # this one is the must useful for us !!!
    if ($_byte1 == 0xE8)
        set $_nextaddress = $pc + 0x5
    else
        # just other cases we might be interested in... maybe this should be
        removed since the 0xE8 opcode is the one we will use more
        # this is a big fucking mess and can be improved for sure :) I don't
        like the way it is ehehehe
        if ($_byte1 == 0xFF)
            # call *%eax (0xFFD0) || call *%edx (0xFFD2) || call *(%ecx)
            (0xFFD1) || call (%eax) (0xFF10) || call *%esi (0xFFD6) || call *%ebx (0xFFD3) ||
            call DWORD PTR [edx] (0xFF12)
            if ($_byte2 == 0xD0 || $_byte2 == 0xD1 || $_byte2 == 0xD2 ||
            $_byte2 == 0xD3 || $_byte2 == 0xD6 || $_byte2 == 0x10 || $_byte2 == 0x11 || $_byte2
            == 0xD7 || $_byte2 == 0x12)
                set $_nextaddress = $pc + 0x2
            end
            # call *0x??(%ebp) (0xFF55??) || call *0x??(%esi) (0xFF56??) ||
            call *0x??(%edi) (0xFF5F??) || call *0x??(%ebx)
            # call *0x??(%edx) (0xFF52??) || call *0x??(%ecx) (0xFF51??) ||

```

```

call *0x??(%edi) (0xFF57??) || call *0x??(%eax) (0xFF50??)
    if ($_byte2 == 0x55 || $_byte2 == 0x56 || $_byte2 == 0x5F || 
$_byte2 == 0x53 || $_byte2 == 0x52 || $_byte2 == 0x51 || $_byte2 == 0x57 || $_byte2 
== 0x50)
        set $_nextaddress = $pc + 0x3
    end
    # call *0x????????(%ebx) (0xFF93????????) ||
    if ($_byte2 == 0x93 || $_byte2 == 0x94 || $_byte2 == 0x90 || 
$_byte2 == 0x92 || $_byte2 == 0x95 || $_byte2 == 0x15)
        set $_nextaddress = $pc + 6
    end
    # call *0x????????(%ebx,%eax,4) (0xFF94????????)
    if ($_byte2 == 0x94)
        set $_nextaddress = $pc + 7
    end
end
# FIXME: still missing a few?
if ($_byte1 == 0x41 || $_byte1 == 0x40)
    if ($_byte2 == 0xFF)
        if ($_byte3 == 0xD0 || $_byte3 == 0xD1 || $_byte3 == 0xD2 || 
$_byte3 == 0xD3 || $_byte3 == 0xD4 || $_byte3 == 0xD5 || $_byte3 == 0xD6 || 
$_byte3 == 0xD7)
            set $_nextaddress = $pc + 0x3
    end
end
end
# if we have found a call to bypass we set a temporary breakpoint on next 
instruction and continue
if ($_nextaddress != 0)
    if ($arg0 == 1)
        thbreak *$_nextaddress
    else
        tbreak *$_nextaddress
    end
    continue
    # else we just single step
else
    nexti
end
end
end
document stepoframework
Syntax: stepoframework
| Auxiliary function to stepo command.
end

define stepo
    stepoframework 0
end
document stepo
Syntax: stepo
| Step over calls (interesting to bypass the ones to msgSend).
| This function will set a temporary breakpoint on next instruction after the call 
so the call will be bypassed.
| You can safely use it instead nexti or n since it will single step code if it's 
not a call instruction (unless you want to go into the call function).
end

```

```

define stepoh
    stepoframework 1
end
document stepoh
Syntax: stepoh
| Same as stepo command but uses temporary hardware breakpoints.
end

# FIXME: ARM
define skip
    x/2i $pc
    set $instruction_size = (int)($_- $pc)
    set $pc = $pc + $instruction_size
    if ($SKIPEXECUTE == 1)
        if ($SKIPSTEP == 1)
            stepo
        else
            stepi
    end
    else
        context
    end
end
document skip
Syntax: skip
| Skip over the instruction located at EIP/RIP. By default, the instruction will
not be executed!
| Some configurable options are available on top of gdbinit to override this.
end

```

```

# _____eflags commands_____
# conditional flags are
# negative/less than (N), bit 31 of CPSR
# zero (Z), bit 30
# Carry/Borrow/Extend (C), bit 29
# Overflow (V), bit 28

# negative/less than (N), bit 31 of CPSR
define cfn
    if $ARM == 1
        set $tempflag = $cpsr->n
        if ($tempflag & 1)
            set $cpsr->n = $tempflag&~0x1
        else
            set $cpsr->n = $tempflag|0x1
        end
    end
end
document cfn
Syntax: cfn
| Change Negative/Less Than Flag.
end

```

```

define cfc
# Carry/Borrow/Extend (C), bit 29

```

```

if $ARM == 1
    set $tempflag = $cpsr->c
    if ($tempflag & 1)
        set $cpsr->c = $tempflag&~0x1
    else
        set $cpsr->c = $tempflag|0x1
    end
else
    if ((unsigned int)$eflags & 1)
        set $eflags = (unsigned int)$eflags&~0x1
    else
        set $eflags = (unsigned int)$eflags|0x1
    end
end
end
document cfc
Syntax: cfc
| Change Carry Flag.
end

define cfp
    if (((unsigned int)$eflags >> 2) & 1)
        set $eflags = (unsigned int)$eflags&~0x4
    else
        set $eflags = (unsigned int)$eflags|0x4
    end
end
document cfp
Syntax: cfp
| Change Parity Flag.
end

define cfa
    if (((unsigned int)$eflags >> 4) & 1)
        set $eflags = (unsigned int)$eflags&~0x10
    else
        set $eflags = (unsigned int)$eflags|0x10
    end
end
document cfa
Syntax: cfa
| Change Auxiliary Carry Flag.
end

define cfz
# zero (Z), bit 30
    if $ARM == 1
        set $tempflag = $cpsr->z
        if ($tempflag & 1)
            set $cpsr->z = $tempflag&~0x1
        else
            set $cpsr->z = $tempflag|0x1
        end
    else
        if (((unsigned int)$eflags >> 6) & 1)
            set $eflags = (unsigned int)$eflags&~0x40

```

```

        else
            set $eflags = (unsigned int)$eflags|0x40
        end
    end
end
document cfz
Syntax: cfz
| Change Zero Flag.
end

define cfs
    if (((unsigned int)$eflags >> 7) & 1)
        set $eflags = (unsigned int)$eflags&~0x80
    else
        set $eflags = (unsigned int)$eflags|0x80
    end
end
document cfs
Syntax: cfs
| Change Sign Flag.
end

define cft
    if (((unsigned int)$eflags >>8) & 1)
        set $eflags = (unsigned int)$eflags&~0x100
    else
        set $eflags = (unsigned int)$eflags|0x100
    end
end
document cft
Syntax: cft
| Change Trap Flag.
end

define cfi
    if (((unsigned int)$eflags >> 9) & 1)
        set $eflags = (unsigned int)$eflags&~0x200
    else
        set $eflags = (unsigned int)$eflags|0x200
    end
end
document cfi
Syntax: cfi
| Change Interrupt Flag.
| Only privileged applications (usually the OS kernel) may modify IF.
| This only applies to protected mode (real mode code may always modify IF).
end

define cfd
    if (((unsigned int)$eflags >>0xA) & 1)
        set $eflags = (unsigned int)$eflags&~0x400
    else
        set $eflags = (unsigned int)$eflags|0x400
    end
end

```

```

document cfd
Syntax: cfd
| Change Direction Flag.
end

define cfo
    if (((unsigned int)$eflags >> 0xB) & 1)
        set $eflags = (unsigned int)$eflags&~0x800
    else
        set $eflags = (unsigned int)$eflags|0x800
    end
end
document cfo
Syntax: cfo
| Change Overflow Flag.
end

# Overflow (V), bit 28
define cfv
    if $ARM == 1
        set $tempflag = $cpsr->v
        if ($tempflag & 1)
            set $cpsr->v = $tempflag&~0x1
        else
            set $cpsr->v = $tempflag|0x1
        end
    end
end
document cfv
Syntax: cfv
| Change Overflow Flag.
end

# _____patch_____
# the usual nops are mov r0,r0 for arm (0xe1a00000)
# and mov r8,r8 in Thumb (0x46c0)
# armv7 has other nops
# FIXME: make sure that the interval fits the 32bits address for arm and 16bits for
# thumb
# status: works, fixme
define nop
    if ($argc > 2 || $argc == 0)
        help nop
    end

    if $ARM == 1
        if ($argc == 1)
            if ($cpsr->t &1)
                # thumb
                set *(short *)&$arg0 = 0x46c0
            else
                # arm
                set *(int *)&$arg0 = 0xe1a00000
            end
        else
            set $addr = $arg0
        end
    end

```

```

        if ($cpsr->t & 1)
        # thumb
            while ($addr < $arg1)
                set *(short *)$addr = 0x46c0
                set $addr = $addr + 2
            end
        else
            # arm
            while ($addr < $arg1)
                set *(int *)$addr = 0xe1a00000
                set $addr = $addr + 4
            end
        end
    end
else
    if ($argc == 1)
        set *(unsigned char *)$arg0 = 0x90
    else
        set $addr = $arg0
        while ($addr < $arg1)
            set *(unsigned char *)$addr = 0x90
            set $addr = $addr + 1
        end
    end
end
end
document nop

```

Syntax: nop ADDR1 [ADDR2]
| Patch a single byte at address ADDR1, or a series of bytes between ADDR1 and ADDR2 to a NOP (0x90) instruction.
| ARM or Thumb code will be patched accordingly.
end

```

define null
if ( $argc >2 || $argc == 0)
    help null
end

```

```

if ($argc == 1)
    set *(unsigned char *)$arg0 = 0
else
    set $addr = $arg0
    while ($addr < $arg1)
        set *(unsigned char *)$addr = 0
        set $addr = $addr +1
    end
end

```

```
end
document null

```

Syntax: null ADDR1 [ADDR2]
| Patch a single byte at address ADDR1 to NULL (0x00), or a series of bytes between ADDR1 and ADDR2.
end

```
# FIXME: thumb breakpoint ?

```

```
define int3
if $argc != 1
    help int3

```

```

else
    if $ARM == 1
        set $ORIGINAL_INT3 = *(unsigned int *)$arg0
        set $ORIGINAL_INT3ADDRESS = $arg0
        set *(unsigned int*)$arg0 = 0xe7ffdefe
    else
        # save original bytes and address
        set $ORIGINAL_INT3 = *(unsigned char *)$arg0
        set $ORIGINAL_INT3ADDRESS = $arg0
        # patch
        set *(unsigned char *)$arg0 = 0xCC
    end
end
document int3
Syntax int3 ADDR
| Patch byte at address ADDR to an INT3 (0xCC) instruction or the equivalent
software breakpoint for ARM.
end

define rint3
    if $ARM == 1
        set *(unsigned int *)$ORIGINAL_INT3ADDRESS = $ORIGINAL_INT3
        set $pc = $ORIGINAL_INT3ADDRESS
    else
        set *(unsigned char *)$ORIGINAL_INT3ADDRESS = $ORIGINAL_INT3
        if ($64BITS == 1)
            set $rip = $ORIGINAL_INT3ADDRESS
        else
            set $eip = $ORIGINAL_INT3ADDRESS
        end
    end
end
document rint3
Syntax: rint3
| Restore the original byte previous to int3 patch issued with "int3" command.
end

define patch
    if $argc != 3
        help patch
    end
    set $patchaddr = $arg0
    set $patchbytes = $arg1
    set $patchsize = $arg2

    if ($patchsize == 1)
        set *(unsigned char*)$patchaddr = $patchbytes
    end
    if ($patchsize == 2)
        set $lendianbytes = (unsigned short)((($patchbytes << 8) | ($patchbytes >>
8))
        set *(unsigned short*)$patchaddr = $lendianbytes
    end
    if ($patchsize == 4)
        set $lendianbytes = (unsigned int)( (($patchbytes << 8) & 0xFF00FF00 ) |
((($patchbytes >> 8) & 0xFF00FF ))
        set $lendianbytes = (unsigned int)($lendianbytes << 0x10 | $lendianbytes >>

```

```

0x10)
    set *(unsigned int*)$patchaddr = $lendianbytes
end
if ($patchsize == 8)
    set $lendianbytes = (unsigned long long)( (($patchbytes << 8) &
0xFF00FF00FF00FF00ULL ) | (($patchbytes >> 8) & 0x00FF00FF00FF00ULL ) )
    set $lendianbytes = (unsigned long long)( (($lendianbytes << 0x10) &
0xFFFF0000FFFF0000ULL ) | (($lendianbytes >> 0x10) & 0x0000FFFF0000FFFFULL ) )
    set $lendianbytes = (unsigned long long)( ($lendianbytes << 0x20) |
($lendianbytes >> 0x20) )
    set *(unsigned long long*)$patchaddr = $lendianbytes
end
end
document patch
Syntax: patch address bytes size
| Patch a given address, converting the bytes to little-endian.
| Assumes input bytes are unsigned values and should be in hexadecimal format
(0x...).
| Size must be 1, 2, 4, 8 bytes.
| Main purpose is to be used with the output from the asm commands.
end

# _____cflow_____
define print_insn_type
    if $argc != 1
        help print_insn_type
    else
        if ($arg0 < 0 || $arg0 > 5)
            printf "UNDEFINED/WRONC VALUE"
        end
        if ($arg0 == 0)
            printf "UNKNOWN"
        end
        if ($arg0 == 1)
            printf "JMP"
        end
        if ($arg0 == 2)
            printf "JCC"
        end
        if ($arg0 == 3)
            printf "CALL"
        end
        if ($arg0 == 4)
            printf "RET"
        end
        if ($arg0 == 5)
            printf "INT"
        end
    end
end
document print_insn_type
Syntax: print_insn_type INSN_TYPE_NUMBER
| Print human-readable mnemonic for the instruction type (usually $INSN_TYPE).
end

define get_insn_type
    if $argc != 1
        help get_insn_type

```

```

else
    set $INSN_TYPE = 0
    set $_byte1 = *(unsigned char *)$arg0
    if ($_byte1 == 0x9A || $_byte1 == 0xE8)
        # "call"
        set $INSN_TYPE = 3
    end
    if ($_byte1 >= 0xE9 && $_byte1 <= 0xEB)
        # "jmp"
        set $INSN_TYPE = 1
    end
    if ($_byte1 >= 0x70 && $_byte1 <= 0x7F)
        # "jcc"
        set $INSN_TYPE = 2
    end
    if ($_byte1 >= 0xE0 && $_byte1 <= 0xE3 )
        # "jcc"
        set $INSN_TYPE = 2
    end
    if ($_byte1 == 0xC2 || $_byte1 == 0xC3 || $_byte1 == 0xCA || \
        $_byte1 == 0xCB || $_byte1 == 0xCF)
        # "ret"
        set $INSN_TYPE = 4
    end
    if ($_byte1 >= 0xCC && $_byte1 <= 0xCE)
        # "int"
        set $INSN_TYPE = 5
    end
    if ($_byte1 == 0x0F )
        # two-byte opcode
        set $_byte2 = *(unsigned char *)($arg0 + 1)
        if ($_byte2 >= 0x80 && $_byte2 <= 0x8F)
            # "jcc"
            set $INSN_TYPE = 2
        end
    end
    if ($_byte1 == 0xFF)
        # opcode extension
        set $_byte2 = *(unsigned char *)($arg0 + 1)
        set $_opext = ($_byte2 & 0x38)
        if ($_opext == 0x10 || $_opext == 0x18)
            # "call"
            set $INSN_TYPE = 3
        end
        if ($_opext == 0x20 || $_opext == 0x28)
            # "jmp"
            set $INSN_TYPE = 1
        end
    end
end
document get_insn_type
Syntax: get_insn_type ADDR
| Recognize instruction type at address ADDR.
| Take address ADDR and set the global $INSN_TYPE variable to
| 0, 1, 2, 3, 4, 5 if the instruction at that address is
| unknown, a jump, a conditional jump, a call, a return, or an interrupt.
end

```

```

define step_to_call
  set $_saved_ctx = $SHOW_CONTEXT
  set $SHOW_CONTEXT = 0
  set $SHOW_NEST_INSN = 0

  set logging file /dev/null
  set logging redirect on
  set logging on

  set $_cont = 1
  while ($_cont > 0)
    stepi
    get_insn_type $pc
    if ($INSN_TYPE == 3)
      set $_cont = 0
    end
  end

  set logging off

  if ($_saved_ctx > 0)
    context
  end

  set $SHOW_CONTEXT = $_saved_ctx
  set $SHOW_NEST_INSN = 0

  set logging file ~/gdb.txt
  set logging redirect off
  set logging on

  printf "step_to_call command stopped at:\n"
  x/i $pc
  printf "\n"
  set logging off

end
document step_to_call
Syntax: step_to_call
| Single step until a call instruction is found.
| Stop before the call is taken.
| Log is written into the file ~/gdb.txt.
end

define trace_calls
  printf "Tracing...please wait...\n"

  set $_saved_ctx = $SHOW_CONTEXT
  set $SHOW_CONTEXT = 0
  set $SHOW_NEST_INSN = 0
  set $_nest = 1
  set listsize 0

  set logging overwrite on
  set logging file ~/gdb_trace_calls.txt
  set logging on

```

```

set logging off
set logging overwrite off

while ($_nest > 0)
    get_insn_type $pc
    # handle nesting
    if ($INSN_TYPE == 3)
        set $_nest = $_nest + 1
    else
        if ($INSN_TYPE == 4)
            set $_nest = $_nest - 1
        end
    end
    # if a call, print it
    if ($INSN_TYPE == 3)
        set logging file ~/gdb_trace_calls.txt
        set logging redirect off
        set logging on

        set $x = $_nest - 2
        while ($x > 0)
            printf "\t"
            set $x = $x - 1
        end
        x/i $pc
    end

    set logging off
    set logging file /dev/null
    set logging redirect on
    set logging on
    stepi
    set logging redirect off
    set logging off
end

set $SHOW_CONTEXT = $_saved_ctx
set $SHOW_NEST_INSN = 0

printf "Done, check ~/gdb_trace_calls.txt\n"
end
document trace_calls
Syntax: trace_calls
| Create a runtime trace of the calls made by target.
| Log overwrites(!) the file ~/gdb_trace_calls.txt.
end

define trace_run

printf "Tracing...please wait...\n"

set $_saved_ctx = $SHOW_CONTEXT
set $SHOW_CONTEXT = 0
set $SHOW_NEST_INSN = 1
set logging overwrite on
set logging file ~/gdb_trace_run.txt
set logging redirect on
set logging on

```

```

set $_nest = 1

while ( $_nest > 0 )

    get_insn_type $pc
    # jmp, jcc, or cll
    if ($INSN_TYPE == 3)
        set $_nest = $_nest + 1
    else
        # ret
        if ($INSN_TYPE == 4)
            set $_nest = $_nest - 1
        end
    end
    stepi
end

printf "\n"

set $SHOW_CONTEXT = $_saved_ctx
set $SHOW_NEST_INSN = 0
set logging redirect off
set logging off

# clean up trace file
shell grep -v ' at ' ~/gdb_trace_run.txt > ~/gdb_trace_run.1
shell grep -v ' in ' ~/gdb_trace_run.1 > ~/gdb_trace_run.txt
shell rm -f ~/gdb_trace_run.1
printf "Done, check ~/gdb_trace_run.txt\n"
end
document trace_run
Syntax: trace_run
| Create a runtime trace of target.
| Log overwrites(!) the file ~/gdb_trace_run.txt.
end

define entry_point

    set logging redirect on
    set logging file /tmp/gdb-entry_point
    set logging on

    info files

    set logging off

    shell entry_point=$(~/usr/bin/grep 'Entry point:' /tmp/gdb-entry_point | \
~/usr/bin/awk '{ print $3 }'); echo "$entry_point"; echo 'set $entry_point_address' \
= '"$entry_point" > /tmp/gdb-entry_point
        source /tmp/gdb-entry_point
        shell /bin/rm -f /tmp/gdb-entry_point
end
document entry_point
Syntax: entry_point
| Prints the entry point address of the target and stores it in the variable
entry_point.
end

define break_entrypoint

```

```

entry_point
break *$entry_point_address
end
document break_entrypoint
Syntax: break_entrypoint
| Sets a breakpoint on the entry point of the target.
end

define objc_symbols

    set logging redirect on
    set logging file /tmp/gdb-objc_symbols
    set logging on

    info target

    set logging off
    # XXX: define paths for objc-symbols and SymTabCreator
    shell target="$(/usr/bin/head -1 /tmp/gdb-objc_symbols | /usr/bin/head -1
| /usr/bin/awk -F '"' '{ print $2 }')"; objc-symbols "$target" | SymTabCreator
-o /tmp/gdb-symtab

    set logging on
    add-symbol-file /tmp/gdb-symtab
    set logging off
    shell /bin/rm -f /tmp/gdb-objc_symbols
end
document objc_symbols
Syntax: objc_symbols
| Loads stripped objc symbols into gdb using objc-symbols and SymTabCreator
| See http://stackoverflow.com/questions/17554070/import-class-dump-info-into-gdb
| and https://github.com/0xed/class-dump/tree/objc-symbols (for the required
utils)
end

#define ptraceme
#    catch syscall ptrace
#    commands
#        if ($64BITS == 0)
#            if ($ebx == 0)
#                set $eax = 0
#                continue
#            end
#        else
#            if ($rdi == 0)
#                set $rax = 0
#                continue
#            end
#        end
#    end
#    set $ptrace_bpnum = $bpnum
#endif
#document ptraceme
#Syntax: ptraceme
#| Hook ptrace to bypass PTRACE_TRACEME anti debugging technique
#endif

define rptraceme
    if ($ptrace_bpnum != 0)

```

```

        delete $ptrace_bpnum
        set $ptrace_bpnum = 0
    end
end
document rptraceme
Syntax: rptraceme
| Remove ptrace hook.
end

# _____misc_____
define hook-stop
    if (sizeof(void*) == 8)
        set $64BITS = 1
    else
        set $64BITS = 0
    end

    if ($KDP64BITS != -1)
        if ($KDP64BITS == 0)
            set $64BITS = 0
        else
            set $64BITS = 1
        end
    end
# Display instructions formats
if $ARM == 1
    if $ARMOPCODES == 1
        set arm show-opcode-bytes 1
    end
else
    if $X86FLAVOR == 0
        set disassembly-flavor intel
    else
        set disassembly-flavor att
    end
end

# this makes 'context' be called at every BP/step
if ($SHOW_CONTEXT > 0)
    context
end
if ($SHOW_NEST_INSN > 0)
    set $x = $_nest
    while ($x > 0)
        printf "\t"
        set $x = $x - 1
    end
end
end
document hook-stop
Syntax: hook-stop
| !!! FOR INTERNAL USE ONLY - DO NOT CALL !!!
end

# original by Tavis Ormandy (http://my.opera.com/taviso/blog/index.dml/tag/gdb)
(great fix!)

```

```

# modified to work with Mac OS X by fG!
# seems nasm shipping with Mac OS X has problems accepting input from stdin or
heredoc
# input is read into a variable and sent to a temporary file which nasm can read
define assemble
    # dont enter routine again if user hits enter
    dont-repeat
    if ($argc)
        if (*$arg0 = *$arg0)
            # check if we have a valid address by dereferencing it,
            # if we havnt, this will cause the routine to exit.
            end
        printf "Instructions will be written to %#x.\n", $arg0
    else
        printf "Instructions will be written to stdout.\n"
    end
    printf "Type instructions, one per line."
    color_bold
    printf " Do not forget to use NASM assembler syntax!\n"
    color_reset
    printf "End with a line saying just \"end\".\n"

    if ($argc)
        if ($64BITS == 1)
            # argument specified, assemble instructions into memory at address
specified.
            shell ASMOPCODE=$(while read -ep '>' r && test "$r" != end ; do echo
-E "$r"; done) ; GDBASMFILENAME=$RANDOM; \
            echo -e "BITS 64\n$ASMOPCODE" >/tmp/$GDBASMFILENAME ;
/usr/local/bin/nasm -f bin -o /dev/stdout /tmp/$GDBASMFILENAME | /usr/bin/hexdump
-ve '1/1 "set *((unsigned char *) $arg0 + %#2_ax) = %#02x\n"'
>/tmp/gdbassemble ; /bin/rm -f /tmp/$GDBASMFILENAME
            source /tmp/gdbassemble
            # all done. clean the temporary file
            shell /bin/rm -f /tmp/gdbassemble
        else
            # argument specified, assemble instructions into memory at address
specified.
            shell ASMOPCODE=$(while read -ep '>' r && test "$r" != end ; do echo
-E "$r"; done) ; GDBASMFILENAME=$RANDOM; \
            echo -e "BITS 32\n$ASMOPCODE" >/tmp/$GDBASMFILENAME ; /usr/bin/nasm
-f bin -o /dev/stdout /tmp/$GDBASMFILENAME | /usr/bin/hexdump -ve '1/1 "set
*((unsigned char *) $arg0 + %#2_ax) = %#02x\n'" >/tmp/gdbassemble ; /bin/rm -f
/tmp/$GDBASMFILENAME
            source /tmp/gdbassemble
            # all done. clean the temporary file
            shell /bin/rm -f /tmp/gdbassemble
        end
    else
        if ($64BITS == 1)
            # no argument, assemble instructions to stdout
            shell ASMOPCODE=$(while read -ep '>' r && test "$r" != end ; do echo
-E "$r"; done) ; GDBASMFILENAME=$RANDOM; \
            echo -e "BITS 64\n$ASMOPCODE" >/tmp/$GDBASMFILENAME ;
/usr/local/bin/nasm -f bin -o /dev/stdout /tmp/$GDBASMFILENAME |
/usr/local/bin/ndisasm -i -b64 /dev/stdin ; \
            /bin/rm -f /tmp/$GDBASMFILENAME
        else
            # no argument, assemble instructions to stdout

```

```

    shell ASMOPCODE=$(while read -ep '>' r && test "$r" != end ; do echo
-E "$r"; done) ; GDBASMFILENAME=$RANDOM; \
    echo -e "BITS 32\n$ASMOPCODE" >/tmp/$GDBASMFILENAME ; /usr/bin/nasm -f
bin -o /dev/stdout /tmp/$GDBASMFILENAME | /usr/bin/ndisasm -i -b32 /dev/stdin ; \
    /bin/rm -f /tmp/$GDBASMFILENAME
    end
end
end
document assemble
Syntax: assemble <ADDR>
| Assemble instructions using nasm.
| Type a line containing "end" to indicate the end.
| If an address is specified, insert/modify instructions at that address.
| If no address is specified, assembled instructions are printed to stdout.
| Use the pseudo instruction "org ADDR" to set the base address.
end

define assemble32
    # dont enter routine again if user hits enter
    dont-repeat
    if ($argc)
        if (*$arg0 = *$arg0)
            # check if we have a valid address by dereferencing it,
            # if we havnt, this will cause the routine to exit.
            end
        printf "Instructions will be written to %#x.\n", $arg0
    else
        printf "Instructions will be written to stdout.\n"
    end
    printf "Type instructions, one per line."
    color_bold
    printf " Do not forget to use NASM assembler syntax!\n"
    color_reset
    printf "End with a line saying just \"end\".\n"

    if ($argc)
        # argument specified, assemble instructions into memory at address
specified.
        shell ASMOPCODE=$(while read -ep '>' r && test "$r" != end ; do echo -E
"$r"; done) ; GDBASMFILENAME=$RANDOM; \
        echo -e "BITS 32\n$ASMOPCODE" >/tmp/$GDBASMFILENAME ; /usr/bin/nasm -f bin
-o /dev/stdout /tmp/$GDBASMFILENAME | /usr/bin/hxdump -ve '1/1 "set *((unsigned
char *) $arg0 + %#2_ax) = %#02x\n"' >/tmp/gdbassemble ; /bin/rm -f /tmp/
$GDBASMFILENAME
        source /tmp/gdbassemble
        # all done. clean the temporary file
        shell /bin/rm -f /tmp/gdbassemble
    else
        # no argument, assemble instructions to stdout
        shell ASMOPCODE=$(while read -ep '>' r && test "$r" != end ; do echo -E
"$r"; done) ; GDBASMFILENAME=$RANDOM; \
        echo -e "BITS 32\n$ASMOPCODE" >/tmp/$GDBASMFILENAME ; /usr/bin/nasm -f bin
-o /dev/stdout /tmp/$GDBASMFILENAME | /usr/bin/ndisasm -i -b32 /dev/stdin ; \
        /bin/rm -f /tmp/$GDBASMFILENAME
    end
end
document assemble32
Syntax: assemble32 <ADDR>
| Assemble 32 bits instructions using nasm.

```

```

| Type a line containing "end" to indicate the end.
| If an address is specified, insert/modify instructions at that address.
| If no address is specified, assembled instructions are printed to stdout.
| Use the pseudo instruction "org ADDR" to set the base address.
end

define assemble64
    # dont enter routine again if user hits enter
    dont-repeat
    if ($argc)
        if (*$arg0 = *$arg0)
            # check if we have a valid address by dereferencing it,
            # if we havnt, this will cause the routine to exit.
            end
        printf "Instructions will be written to %#x.\n", $arg0
    else
        printf "Instructions will be written to stdout.\n"
    end
    printf "Type instructions, one per line."
    color_bold
    printf " Do not forget to use NASM assembler syntax!\n"
    color_reset
    printf "End with a line saying just \"end\".\n"

    if ($argc)
        # argument specified, assemble instructions into memory at address
specified.
        shell ASMOPCODE=$(while read -ep '>' r && test "$r" != end ; do echo -E
"$r"; done) ; GDBASMFILENAME=$RANDOM; \
            echo -e "BITS 64\n$ASMOPCODE" >/tmp/$GDBASMFILENAME ; /usr/local/bin/nasm
-f bin -o /dev/stdout /tmp/$GDBASMFILENAME | /usr/bin/hexdump -ve '1/1 "set
*((unsigned char *) $arg0 + %#2_ax) = %#02x\n"' >/tmp/gdbassemble ; /bin/rm -f
/tmp/$GDBASMFILENAME
            source /tmp/gdbassemble
            # all done. clean the temporary file
            shell /bin/rm -f /tmp/gdbassemble
    else
        # no argument, assemble instructions to stdout
        shell ASMOPCODE=$(while read -ep '>' r && test "$r" != end ; do echo -E
"$r"; done) ; GDBASMFILENAME=$RANDOM; \
            echo -e "BITS 64\n$ASMOPCODE" >/tmp/$GDBASMFILENAME ; /usr/local/bin/nasm
-f bin -o /dev/stdout /tmp/$GDBASMFILENAME | /usr/local/bin/ndisasm -i -b64
/dev/stdin ; \
            /bin/rm -f /tmp/$GDBASMFILENAME
    end
end
document assemble64
Syntax: assemble64 <ADDR>
| Assemble 64 bits instructions using nasm.
| Type a line containing "end" to indicate the end.
| If an address is specified, insert/modify instructions at that address.
| If no address is specified, assembled instructions are printed to stdout.
| Use the pseudo instruction "org ADDR" to set the base address.
end

define asm
    if $argc == 1
        assemble $arg0
    else

```

```

        assemble
    end
end
document asm
Syntax: asm <ADDR>
| Shortcut to the assemble command.
end

define asm32
    if $argc == 1
        assemble32 $arg0
    else
        assemble32
    end
end
document asm32
Syntax: asm32 <ADDR>
| Shortcut to the assemble32 command.
end

define asm64
    if $argc == 1
        assemble64 $arg0
    else
        assemble64
    end
end
document asm64
Syntax: asm64 <ADDR>
| Shortcut to the assemble64 command.
end

define assemble_gas
    printf "\nType code to assemble and hit Ctrl-D when finished.\n"
    printf "You must use GNU assembler (AT&T) syntax.\n"

    shell filename=$(mktemp); \
        binfilename=$(mktemp); \
        echo -e "Writing into: ${filename}\n"; \
        cat > $filename; echo ""; \
        as -o $binfilename < $filename; \
        objdump -d -j .text $binfilename; \
        rm -f $binfilename; \
        rm -f $filename; \
        echo -e "temporaly files deleted.\n"
end
document assemble_gas
Syntax: assemble_gas
| Assemble instructions to binary opcodes. Uses GNU as and objdump.
end

define dump_hexfile
    dump ihex memory $arg0 $arg1 $arg2
end
document dump_hexfile
Syntax: dump_hexfile FILENAME ADDR1 ADDR2
| Write a range of memory to a file in Intel ihex (hexdump) format.
| The range is specified by ADDR1 and ADDR2 addresses.

```

```

end

define dump_binfile
    dump memory $arg0 $arg1 $arg2
end
document dump_binfile
Syntax: dump_binfile FILENAME ADDR1 ADDR2
| Write a range of memory to a binary file.
| The range is specified by ADDR1 and ADDR2 addresses.
end

define dumpmacho
    if $argc != 2
        help dumpmacho
    end
    set $headermagic = *$arg0
    # the || operator isn't working as it should, wtf!!!
    if $headermagic != 0xfeedface
        if $headermagic != 0xfeedfacf
            printf "[Error] Target address doesn't contain a valid Mach-O
binary!\n"
            help dumpmacho
        end
    end
    set $headerdumpsize = *($arg0+0x14)
    if $headermagic == 0xfeedface
        dump memory $arg1 $arg0 ($arg0+0x1c+$headerdumpsize)
    end
    if $headermagic == 0xfeedfacf
        dump memory $arg1 $arg0 ($arg0+0x20+$headerdumpsize)
    end
end
document dumpmacho
Syntax: dumpmacho STARTADDRESS FILENAME
| Dump the Mach-O header to a file.
| You need to input the start address (use info shared command to find it).
end

define cls
    shell clear
end
document cls
Syntax: cls
| Clear screen.
end

define search
    set $start = (char *) $arg0
    set $end = (char *) $arg1
    set $pattern = (short) $arg2
    set $p = $start
    while $p < $end
        if (*(short *) $p) == $pattern
            printf "pattern 0x%hx found at 0x%xx\n", $pattern, $p
        end
    end

```

```

        set $p++
end
end
document search
Syntax: search <START> <END> <PATTERN>
| Search for the given pattern between $start and $end address.
end

# _____ user tips _____
# The 'tips' command is used to provide tutorial-like info to the user
define tips
    printf "Tip Topic Commands:\n"
    printf "\ttip_display : Automatically display values on each break\n"
    printf "\ttip_patch   : Patching binaries\n"
    printf "\ttip_strip    : Dealing with stripped binaries\n"
    printf "\ttip_syntax   : AT&T vs Intel syntax\n"
end
document tips
Syntax: tips
| Provide a list of tips from users on various topics.
end

define tip_patch
    printf "\n"
    printf "          PATCHING MEMORY\n"
    printf "Any address can be patched using the 'set' command:\n"
    printf "\t`set ADDR = VALUE` \te.g. `set *0x8049D6E = 0x90`\n"
    printf "\n"
    printf "          PATCHING BINARY FILES\n"
    printf "Use `set write` in order to patch the target executable\n"
    printf "directly, instead of just patching memory\n"
    printf "\t`set write on` \t`set write off`\n"
    printf "Note that this means any patches to the code or data segments\n"
    printf "will be written to the executable file\n"
    printf "When either of these commands has been issued,\n"
    printf "the file must be reloaded.\n"
    printf "\n"
end
document tip_patch
Syntax: tip_patch
| Tips on patching memory and binary files.
end

define tip_strip
    printf "\n"
    printf "          STOPPING BINARIES AT ENTRY POINT\n"
    printf "Stripped binaries have no symbols, and are therefore tough to\n"
    printf "start automatically. To debug a stripped binary, use\n"
    printf "\tinfo file\n"
    printf "to get the entry point of the file\n"
    printf "The first few lines of output will look like this:\n"
    printf "\tSymbols from '/tmp/a.out'\n"
    printf "\tLocal exec file:\n"
    printf "\t\t`/tmp/a.out', file type elf32-i386.\n"
    printf "\t\tEntry point: 0x80482e0\n"
    printf "Use this entry point to set an entry point:\n"

```

```

printf "\t`tbreak *0x80482e0`\n"
printf "The breakpoint will delete itself after the program stops as\n"
printf "the entry point\n"
printf "\n"
end
document tip_strip
Syntax: tip_strip
| Tips on dealing with stripped binaries.
end

define tip_syntax
printf "\n"
printf "\t INTEL SYNTAX
printf "\tmnemonic dest, src, imm
printf "\t[base+index*scale+disp]
printf "\tregister: eax
printf "\timmediate: 0xFF
printf "\tdereference: [addr]
printf "\tabsolute addr: addr
printf "\tbyte insn: mov byte ptr
printf "\tword insn: mov word ptr
printf "\tdword insn: mov dword ptr
printf "\tfar call: call far
printf "\tfar jump: jmp far
printf "\n"
printf "Note that order of operands is reversed, and that AT&T syntax\n"
printf "requires that all instructions referencing memory operands \n"
printf "use an operand size suffix (b, w, d, q)\n"
printf "\n"
end
document tip_syntax
Syntax: tip_syntax
| Summary of Intel and AT&T syntax differences.
end

define tip_display
printf "\n"
printf "Any expression can be set to automatically be displayed every time\n"
printf "the target stops. The commands for this are:\n"
printf "\t`display expr'      : automatically display expression 'expr'\n"
printf "\t`display'          : show all displayed expressions\n"
printf "\t`undisplay num'   : turn off autodisplay for expression # 'num'\n"
printf "Examples:\n"
printf "\t`display/x *(int *)$esp`      : print top of stack\n"
printf "\t`display/x *(int *)($ebp+8)` : print first parameter\n"
printf "\t`display (char *)$esi`        : print source string\n"
printf "\t`display (char *)$edi`        : print destination string\n"
printf "\n"
end
document tip_display
Syntax: tip_display
| Tips on automatically displaying values when a program stops.
end

# bunch of semi-useless commands

# enable and disable shortcuts for stop-on-solib-events fantastic trick!

```

```
define enablesolib
    set stop-on-solib-events 1
    printf "Stop-on-solib-events is enabled!\n"
end
document enablesolib
Syntax: enablesolib
| Shortcut to enable stop-on-solib-events trick.
end

define disablesolib
    set stop-on-solib-events 0
    printf "Stop-on-solib-events is disabled!\n"
end
document disablesolib
Syntax: disablesolib
| Shortcut to disable stop-on-solib-events trick.
end

# enable commands for different displays
define enableobjectivec
    set $SHOWOBJECTIVEC = 1
end
document enableobjectivec
Syntax: enableobjectivec
| Enable display of objective-c information in the context window.
end

define enablecpuregisters
    set $SHOWCPUREGISTERS = 1
end
document enablecpuregisters
Syntax: enablecpuregisters
| Enable display of cpu registers in the context window.
end

define enablestack
    set $SHOWSTACK = 1
end
document enablestack
Syntax: enablestack
| Enable display of stack in the context window.
end

define enabledatawin
    set $SHOWDATAWIN = 1
end
document enabledatawin
Syntax: enabledatawin
| Enable display of data window in the context window.
end

# disable commands for different displays
define disableobjectivec
```

```

        set $SHOWOBJECTIVEC = 0
end
document disableobjectivec
Syntax: disableobjectivec
| Disable display of objective-c information in the context window.
end

define disablecpuregisters
        set $SHOWCPUREGISTERS = 0
end
document disablecpuregisters
Syntax: disablecpuregisters
| Disable display of cpu registers in the context window.
end

define disablestack
        set $SHOWSTACK = 0
end
document disablestack
Syntax: disablestack
| Disable display of stack information in the context window.
end

define disabledatawin
        set $SHOWDATAWIN = 0
end
document disabledatawin
Syntax: disabledatawin
| Disable display of data window in the context window.
end

define arm
        if $ARMOPCODES == 1
                set arm show-opcode-bytes 1
        end
        set $ARM = 1
end
document arm
Syntax: arm
| Set gdb to work with ARM binaries.
end

define ioskdp
        set $SHOW_CONTEXT = 0
        set $SHOW_NEST_INSN = 0
end
document ioskdp
Syntax: ioskdp
| Disable dumping context information for iOS KDP debugging
end

define intelsyntax
        if $ARM == 0
                set disassembly-flavor intel
                set $X86FLAVOR = 0

```

```

    end
end
document intelsyntax
Syntax: intelsyntax
| Change disassembly syntax to intel flavor.
end

define attsyntax
    if $ARM == 0
        set disassembly-flavor att
        set $X86FLAVOR = 1
    end
end
document attsyntax
Syntax: attsyntax
| Change disassembly syntax to at&t flavor.
end

define kernel32
    if $argc != 0
        # try to load kgmacros files
        # failure is silent if non-existent...
        source $arg0
        set architecture i386
        if $argc == 2
            target remote localhost:$arg1
        else
            target remote localhost:8832
        end
    else
        help kernel32
    end
end
document kernel32
Syntax: kernel32 PATH_TO_KGMACROS <PORT>
| Attach to VMware gdb stub for 32 bits kernel.
| The path to kgmacros must be supplied as first parameter.
| If you don't want to load kgmacros just put something as the first parameter.
| Optional parameter is the port to connect to, in case you are not using the
default 8832
| or want to kernel debug more than one active virtual machine.
| By supplying a bogus kgmacros this command should be compatible with any OS.
end

define kernel64
    if $argc != 0
        # try to load kgmacros files
        # failure is silent if non-existent...
        source $arg0
        set architecture i386:x86-64
        if $argc == 2
            target remote localhost:$arg1
        else
            target remote localhost:8864
        end
    else
        help kernel64
    end

```

```

end
document kernel64
Syntax: kernel64 PATH_TO_KGMACROS <PORT>
| Attach to VMware gdb stub for 64 bits kernel.
| The path to kgmacros must be supplied as first parameter.
| If you don't want to load kgmacros just put something as the first parameter.
| Optional parameter is the port to connect to, in case you are not using the
default 8864
| or want to kernel debug more than one active virtual machine.
| By supplying a bogus kgmacros this command should be compatible with any OS.
end

define 32bits
  set $KDP64BITS = 0
  set $64BITS = 0
end

define 64bits
  set $KDP64BITS = 1
  set $64BITS = 1
end

define resetkdp
  set $KDP64BITS = -1
end

define header
  if $argc != 1
    help header
  else
    dump memory /tmp/gdbinit_header_dump $arg0 $arg0 + 4096
    shell /usr/bin/otool -h /tmp/gdbinit_header_dump
    shell /bin/rm -f /tmp/gdbinit_header_dump
  end
end
document header
Syntax: header MACHO_HEADER_START_ADDRESS
| Dump the Mach-O header located at given address
end

define loadcmds
  if $argc != 1
    help loadcmds
  else
    # this size should be good enough for most binaries
    dump memory /tmp/gdbinit_header_dump $arg0 $arg0 + 4096 * 10
    shell /usr/bin/otool -l /tmp/gdbinit_header_dump
    shell /bin/rm -f /tmp/gdbinit_header_dump
  end
end
document loadcmds
Syntax: loadcmds MACHO_HEADER_START_ADDRESS
| Dump the Mach-O load commands
end

# defining it here doesn't get the space #$$%"#
define disablecolorprompt
  set prompt gdb$
end

```

```

document disablecolorprompt
| Remove color from prompt
end

define enablecolorprompt
    set prompt \033[31mgdb$ \033[0m
end
document enablecolorprompt
| Enable color prompt
end

#EOF

# Older change logs:
#
# Version 7.4.4 (02/01/2012)
# - Added the "skip" command. This will jump to the next instruction after
EIP/RIP without executing the current one.
#     Thanks to @bSr43 for the tip to retrieve the current instruction size.
#
# Version 7.4.3 (04/11/2011)
# - Modified "hexdump" command to support a variable number of lines
(optional parameter)
# - Removed restrictions on type of addresses in the "dd" command - Thanks to
Plouj for the warning :-)
#     I don't know what was the original thinking behind those :-)
# - Modified the assemble command to support 64bits - You will need to
recompile nasm since the version shipped with OS X doesn't supports 64bits
(www.nasm.us).
#     Assumes that the new binary is installed at /usr/local/bin - modify the
variable at the top if you need so.
#     It will assemble based on the target arch being debugged. If you want to
use gdb for a quick asm just use the 32bits or 64bits commands to set your target.
#     Thanks to snare for the warning and original patch :-)
#     - Added "asm" command - it's a shortcut to the "assemble" command.
#     - Added configuration variable for colorized prompt. Plouj reported some
issues with Ubuntu's gdb 7.2 if prompt is colorized.
#
# Version 7.4.2 (11/08/2011)
# Small fix to a weird bug happening on FreeBSD 8.2. It doesn't like a "if("
instruction, needs to be "if (.". Weird!
#     Many thanks to Evan for reporting and sending the patch :-)
#     Added the ptraceme/rptraceme commands to bypass PTRACE_TRACME anti-debugging
technique.
#     Grabbed this from http://falken.tuxfamily.org/?p=171
#     It's commented out due to a gdb problem in OS X (refer to
http://reverse.put.as/2011/08/20/another-patch-for-apples-gdb-the-definecommands-
problem/ )
#     Just uncomment it if you want to use in ptrace enabled systems.
#
# Version 7.4.1 (21/06/2011) - fG!
#     Added patch sent by sbz, more than 1 year ago, which I forgot to add : -/
#     This will allow to search for a given pattern between start and end address.
#     On sbz words: "It's usefull to find call, ret or everything like that." :-)
#     New command is "search"
#
# Version 7.4 (20/06/2011) - fG!
#     When registers change between instructions the color will change to red (like
it happens in OllyDBG)

```

```
#      This is the default behavior, if you don't like it, modify the variable
SHOWREGCHANGES
#      Added patch sent by Philippe Langlois
#      color the first disassembly line - change the setting below on
SETCOLOR1STLINE - by default it's disabled
#
#      Version 7.3.2 (21/02/2011) - fG!
#      Added the command rint3 and modified the int3 command. The new command will
restore the byte in previous int3 patch.
#
#      Version 7.3.1 (29/06/2010) - fG!
#      Added enablelib/disablelib command to quickly set the stop-on-solib-events
trick
#      Implemented the stepoh command equivalent to the stepo but using hardware
breakpoints
#      More fixes to stepo
#
#      Version 7.3 (16/04/2010) - fG!
#      Support for 64bits targets. Default is 32bits, you should modify the
variable or use the 32bits or 64bits to choose the mode.
#      I couldn't find another way to recognize the type of binary... Testing
the register doesn't work that well.
#      TODO: fix objectivec messages and stepo for 64bits
#      Version 7.2.1 (24/11/2009) - fG!
#      Another fix to stepo (0xFF92 missing)
#
#      Version 7.2 (11/10/2009) - fG!
#      Added the smallregisters function to create 16 and 8 bit versions from the
registers EAX, EBX, ECX, EDX
#      Revised and fixed all the dumpjump stuff, following Intel manuals. There
were some errors (thx to rev who pointed the jle problem).
#      Small fix to stepo command (missed a few call types)
#
#      Version 7.1.7 - fG!
#      Added the possibility to modify what's displayed with the context window. You
can change default options at the gdb options part. For example, kernel debugging
is much slower if the stack display is enabled...
#      New commands enableobjectivec, enablecpuregisters, enablestack, enabledatawin
and their disable equivalents (to support realtime change of default options)
#      Fixed problem with the assemble command. I was calling /bin/echo which
doesn't support the -e option ! DUH ! Should have used bash internal version.
#      Small fixes to colors...
#      New commands enablesolib and disablesolib . Just shortcuts for the stop-on-
solib-events fantastic trick ! Hey... I'm lazy ;)
#      Fixed this: Possible removal of "u" command, info udot is missing in gdb 6.8-
debian . Doesn't exist on OS X so bye bye !!!
#      Displays affected flags in jump decisions
#
#      Version 7.1.6 - fG!
#      Added modified assemble command from Tavis Ormandy (further modified to work
with Mac OS X) (shell commands used use full path name, working for Leopard, modify
for others if necessary)
#      Renamed thread command to threads because thread is an internal gdb command
that allows to move between program threads
#
#      Version 7.1.5 (04/01/2009) - fG!
#      Fixed crash on Leopard ! There was a If Else condition where the else had no
code and that made gdb crash on Leopard (CRAZY!!!!)
#      Better code indentation
```

```

#
# Version 7.1.4 (02/01/2009) - fG!
#     Bug in show objective c messages with Leopard ???
#     Nop routine support for single address or range (contribution from gln
[ghalen at hack.se])
#     Used the same code from nop to null routine
#
# Version 7.1.3 (31/12/2008) - fG!
#     Added a new command 'stepo'. This command will step a temporary breakpoint on
next instruction after the call, so you can skip over
#     the call. Did this because normal commands not always skip over (mainly with
objc_msgSend)
#
# Version 7.1.2 (31/12/2008) - fG!
#     Support for the jump decision (will display if a conditional jump will be
taken or not)
#
# Version 7.1.1 (29/12/2008) - fG!
#     Moved gdb options to the beginning (makes more sense)
#     Added support to dump message being sent to msgSend (easier to understand
what's going on)
#
# Version 7.1
#     Fixed serious (and old) bug in dd and datawin, causing dereference of
#     obviously invalid address. See below:
#     gdb$ dd 0xffffffff
#     FFFFFFFF : Cannot access memory at address 0xffffffff
#
# Version 7.0
#     Added cls command.
#     Improved documentation of many commands.
#     Removed bp_alloc, was neither portable nor usefull.
#     Checking of passed argument(s) in these commands:
#         contextsiz-stack, contextsiz-data, contextsiz-code
#         bp, bpc, bpe, bpd, bpt, bpm, bhb, ...
#     Fixed bp and bhb inconsistencies, look at * signs in Version 6.2
#     Bugfix in bhb command, changed "break" to "hb" command body
#     Removed $SHOW_CONTEXT=1 from several commands, this variable
#     should only be controlled globally with context-on and context-off
#     Improved stack, func, var and sig, dis, n, go, ...
#     they take optional argument(s) now
#     Fixed wrong $SHOW_CONTEXT assignment in context-off
#     Fixed serious bug in cft command, forgotten ~ sign
#     Fixed these bugs in step_to_call:
#         1) the correct logging sequence is:
#             set logging file > set logging redirect > set logging on
#         2) $SHOW_CONTEXT is now correctly restored from $_saved_ctx
#     Fixed these bugs in trace_calls:
#         1) the correct logging sequence is:
#             set logging file > set logging overwrite >
#             set logging redirect > set logging on
#         2) removed the "clean up trace file" part, which is not needed now,
#             stepi output is properly redirected to /dev/null
#         3) $SHOW_CONTEXT is now correctly restored from $_saved_ctx
#     Fixed bug in trace_run:
#         1) $SHOW_CONTEXT is now correctly restored from $_saved_ctx
#     Fixed print_insn_type -- removed invalid semicolons!, wrong value checking,
#     Added TODO entry regarding the "u" command
#     Changed name from gas_assemble to assemble_gas due to consistency

```

```
#      Output from assemble and assemble_gas is now similar, because i made
#      both of them to use objdump, with respect to output format (AT&T|Intel).
#      Whole code was checked and made more consistent, readable/maintainable.
#
#      Version 6.2
#          Add global variables to allow user to control stack, data and code window
#          sizes
#          Increase readability for registers
#          Some corrections (hexdump, ddump, context, cfp, assemble, gas_asm, tips,
#          prompt)
#
#      Version 6.1-color-user
#          Took the Gentoo route and ran sed s/user/user/g
#
#      Version 6.1-color
#          Added color fixes from
#          http://gnurbs.blogspot.com/2006/12/22/colorizing-mamons-gdbinit/
#
#      Version 6.1
#          Fixed filename in step_to_call so it points to /dev/null
#          Changed location of logfiles from /tmp to ~
#
#      Version 6
#          Added print_insn_type, get_insn_type, context-on, context-off commands
#          Added trace_calls, trace_run, step_to_call commands
#          Changed hook-stop so it checks $SHOW_CONTEXT variable
#
#      Version 5
#          Added bpm, dump_bin, dump_hex, bp_alloc commands
#          Added 'assemble' by elaine, 'gas_asm' by mong
#          Added Tip Topics for aspiring users ;)
#
#      Version 4
#          Added eflags-changing insns by pusillus
#          Added bp, nop, null, and int3 patch commands, also hook-stop
#
#      Version 3
#          Incorporated elaine's if/else goodness into the hex/ascii dump
#
#      Version 2
#          Radix bugfix by elaine
```