

```

(gdb) print *ch
$3 = {next = 0xb73792a4, next_in_room = 0xb772ab28, master = 0x0, leader = 0x0, fighting =
0x0, reply = 0x0,
  pet = 0x0, mprog_target = 0x0, memory = 0x0, spec_fun = 0, pIndexData = 0x0, desc =
0xb75b8190,
  affected = 0xb78146bc, affected_old = 0x0, pnote = 0x0, pcrime = 0x0, pnpunk = 0x0, pplist =
0x0,
  carrying = 0xb732302c, on = 0x0, in_room = 0xb715fe8c, was_in_room = 0x0, zone = 0x0,
pcdata = 0xb7795bb8,
  gen_data = 0x0, colors = 0xb76c7960 "BmbBbgryrRbBgGWRyCcyYcxRYyDYcWBb dwarven
runes{x",
  soccols = 0xb779f230 "xrYGDmBcbWRyCbWxygbmyMx", valid = true, name = 0xb77e15e4
"Riesen", id = 1611873372,
  version = 5, short_descr = 0x813cc30 "", long_descr = 0x813cc30 "",
  description = 0xb7730974 "The creature before you has a murky green face with a light blue
snout. \n\rAnd blue tinged lips and deep brown sunken eyes. Broad shoulders and long\n\rarms
extend to murky hands. He carries a small co"... , prompt = 0xb76c9550 "%h/%Hhp %m/%Mm
%v/%Vmv %g %s %r %e %x/%X %c", prefix = 0x813cc30 "", group = 0,
  sex = 1, caste = 4, race = 6, level = 58, trust = 0, played = 159055, lines = 22, connect =
1613004478,
  logon = 1613004473, last_fight = 1613008594, timer = 0, wait = 12, daze = 0, hit = 1006,
max_hit = 2012,
  mana = 63, max_mana = 1195, move = 821, max_move = 821, gold = 2769, bank = 4587,
silver = 5210, exp = 339254,
  act = 403767540, comm = 73400320, wiznet = 0, imm_flags = 0, res_flags = 67584, vuln_flags
= 262144,
  invis_level = 0, incog_level = 0, affected_by = {2105344, 524288, 0}, position = 9, train = 6,
lesson = 15,
  carry_weight = 4334, carry_number = 54, saving_throw = -4, alignment = 1000, hitroll = 16,
damroll = 18,
  armor = {-282, -283, -282, -160}, wimpy = 402, advn = 0, pcdeath = 0, mobdeath = 529, pckill =
0, mobkill = 4,
  perm_stat = {20, 13, 14, 18, 23}, mod_stat = {8, 7, 13, 14, 8}, form = 2101377, parts = 2047,
size = 2,
  material = 0x0, off_flags = 0, damage = {0, 0, 0}, dam_type = 17, start_pos = 0, default_pos =
0,
  mprog_delay = 0, summon_timer = 0, bash_timer = 0, bash_count = 0, summon_count = 0,
shield_push_count = 0,
  morph = 0x0, latelog = true, shiftrace = 9, disorient = 0, oolattack = false, oolspell = false,
pcattack = false, group_member = 0}

```

4.11 Ok, so how do I use ``gdb''?

GDB has some online help, though it is not the best. It does at least give a summary of commands and what they're supposed to do. What follows is Sammy's short intro to gdb with some bughunting notes following it:

If you've got a core file, go to your top circle directory and type:

```
> gdb bin/circle lib/core
```

If you want to hunt bugs in real time (causing bugs to find the cause as opposed to checking a core to see why the mud crashed earlier) use:

```
> gdb bin/circle
```

If you're working with a core, gdb should show you where the crash occurred. If you get an actual line that failed, you've got it made. If not, the included message should help. If you're working in real time, now's the time to crash the mud so you can see what gdb catches.

When you've got the crash info, you can type ``where" to see which function called the crash function, which function called that one, and so on all the way up to ``main()".

I should explain about ``context" You may type ``print ch" which you would expect to show you the ch variable, but if you're in a function that doesn't get a ch passed to it (real_mobile, etc), you can't see ch because it's not in that context. To change contexts (the function levels you saw with where) type ``up" to go up. You start at the bottom, but once you go up, and up, and up, you can always go back ``down". You may be able to go up a couple functions to see a function with ch in it, if finding out who caused the crash is useful (it normally isn't).

The ``print" command is probably the single most useful command, and lets you print any variable, and arithmetic expressions (makes a nice calculator if you know C math). Any of the following are valid and sometimes useful:

```
print ch (fast way to see if ch is a valid pointer, 0 if it's not)
print *ch (prints the contents of ch, rather than the pointer address)
print ch->player.name (same as GET_NAME(ch))
print world[ch->in_room].number (vnum of the room the char is in)
etc..
```

Note that you can't use macros (all those handy psuedo functions like GET_NAME and GET_MAX_HIT), so you'll have to look up the full structure path of variables you need.

Type ``list" to see the source before and after the line you're currently looking at. There are other list options but I'm unfamiliar with them.