A Guide to the Mazes of Menace
Nethack Guidebook

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Contents

NetHack is a single player dungeon exploration game that runs on a wide variety of computer systems, with a variety of graphical and text interfaces all using the same game engine. Unlike many other Dungeons & Dragons-inspired games, the emphasis in NetHack is on discovering the detail of the dungeon and not simply killing everything in sight - in fact, killing everything in sight is a good way to die quickly. Each game presents a different landscape - the random number generator provides an essentially unlimited number of variations of the dungeon and its denizens to be discovered by the player in one of a number of characters: you can pick your race, your role, and your gender.

1 Introduction

Recently, you have begun to find yourself unfulfilled and distant in your daily occupation. Strange dreams of stealing, crusading, and combat have haunted you in your sleep for many months, but you aren't sure of the reason. You wonder whether you have in fact been haviqng those dreams all your life, and somehow managed to forget about them until now. Some nights you awaken suddenly and cry out, terrified at the vivid recollection of the strange and powerful creatures that seem to be lurking behind every corner of the dungeon in your dream. Could these details haunting your dreams be real? As each night passes, you feel the desire to enter the mysterious caverns near the ruins grow stronger. Each morning, however, you quickly put the idea out of your head as you recall the tales of those who entered the caverns before you and did not return. Eventually you can resist the yearning to seek out the fantastic place in your dreams no longer. After all, when other adventurers came back this way after spending time in the caverns, they usually seemed better off than when they passed through the first time. And who was to say that all of those who did not return had not just kept going?

Asking around, you hear about a bauble, called the Amulet of Yendor by some, which, if you can find it, will bring you great wealth. One legend you were told even mentioned that the one who finds the amulet will be granted immortality by the gods. The amulet is rumored to be somewhere beyond the Valley of Gehennom, deep within the Mazes of Menace. Upon hearing the legends, you immediately realize that there is some profound and undiscovered reason that you are to descend into the caverns and seek out that amulet of which they spoke. Even if the rumors of the amulet's powers are untrue, you decide that you should at least be able to sell the

tales of your adventures to the local minstrels for a tidy sum, especially if you encounter any of the terrifying and magical creatures of your dreams along the way. You spend one last night fortifying yourself at the local inn, becoming more and more depressed as you watch the odds of your success being posted on the inn's walls getting lower and lower.

In the morning you awake, collect your belongings, and set off for the dungeon. After several days of uneventful travel, you see the ancient ruins that mark the entrance to the Mazes of Menace. It is late at night, so you make camp at the entrance and spend the night sleeping under the open skies. In the morning, you gather your gear, eat what may be your last meal outside, and enter the dungeon...

2 What is going on here?

You have just begun a game of NetHack. Your goal is to grab as much treasure as you can, retrieve the Amulet of Yendor, and escape the Mazes of Menace alive.

Your abilities and strengths for dealing with the hazards of adventure will vary with your background and training:

- Archeologists understand dungeons pretty well; this enables them to move quickly and sneak up on the local nasties. They start equipped with the tools for a proper scientific expedition.

- Barbarians are warriors out of the hinterland, hardened to battle. They begin their quests with naught but uncommon strength, a trusty hauberk, and a great two-handed sword.

- Cavemen and Cavewomen start with exceptional strength but, unfortunately, with neolithic weapons.

- Healers are wise in medicine and apothecary. They know the herbs and simples that can restore vitality, ease pain, anesthetize, and neutralize poisons; and with their instruments, they can divine a being's state of health or sickness. Their medical practice earns them quite reasonable amounts of money, with which they enter the dungeon.

- Knights are distinguished from the common skirmisher by their devotion to the ideals of chivalry and by the surpassing excellence of their armor.

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- Monks are ascetics, who by rigorous practice of physical and mental disciplines have become capable of fighting as effectively without weapons as with. They wear no armor but make up for it with increased mobility.

- Priests and Priestesses are clerics militant, crusaders advancing the cause of righteousness with arms, armor, and arts thaumaturgic. Their ability to commune with deities via prayer occasionally extricates them from peril, but can also put them in it.

- Rangers are most at home in the woods, and some say slightly out of place in a dungeon. They are, however, experts in archery as well as tracking and stealthy movement.

- Rogues are agile and stealthy thieves, with knowledge of locks, traps, and poisons. Their advantage lies in surprise, which they employ to great advantage.

- Samurai are the elite warriors of feudal Nippon. They are lightly armored and quick, and wear the dai-sho, two swords of the deadliest keenness.

- Tourists start out with lots of gold (suitable for shopping with), a credit card, lots of food, some maps, and an expensive camera. Most monsters don't like being photographed.

- Valkyries are hardy warrior women. Their upbringing in the harsh Northlands makes them strong, inures them to extremes of cold, and instills in them stealth and cunning.

- Wizards start out with a knowledge of magic, a selection of magical items, and a particular affinity for dweomercraft. Although seemingly weak and easy to overcome at first sight, an experienced Wizard is a deadly foe.

You may also choose the race of your character (within limits; most roles have restrictions on which races are eligible for them):

- Dwarves are smaller than humans or elves, but are stocky and solid individuals. Dwarves' most notable trait is their great expertise in mining and metalwork. Dwarvish armor is said to be second in quality not even to the mithril armor of the Elves.

- Elves are agile, quick, and perceptive; very little of what goes on will escape an Elf. The quality of Elven craftsmanship often gives them an advantage in arms and armor.

- Gnomes are smaller than but generally similar to dwarves. Gnomes are known to be expert miners, and it is known that a secret underground mine complex built by this race exists within the Mazes of Menace, filled with both riches and danger.

- Humans are by far the most common race of the surface world, and are thus the norm to which other races are often compared. Although they have no special abilities, they can succeed in any role.

- Orcs are a cruel and barbaric race that hate every living thing (including other orcs). Above all others, Orcs hate Elves with a passion unequalled, and will go out of their way to kill one at any opportunity. The armor and weapons fashioned by the Orcs are typically of inferior quality.

3 What do all those things on the screen mean?

On the screen is kept a map of where you have been and what you have seen on the current dungeon level; as you explore more of the level, it appears on the screen in front of you.

When NetHack's ancestor rogue first appeared, its screen orientation was almost unique among computer fantasy games. Since then, screen orientation has become the norm rather than the exception; NetHack continues this fine tradition. Unlike text adventure games that accept commands in pseudo-English sentences and explain the results in words, NetHack commands are all one or two keystrokes and the results are displayed graphically on the screen. A minimum screen size of 24 lines by 80 columns is recommended; if the screen is larger, only a 21x80 section will be used for the map.

NetHack can even be played by blind players, with the assistance of Braille readers or speech synthesisers. Instructions for configuring NetHack for the blind are included later in this document.

NetHack generates a new dungeon every time you play it; even the authors still find it an entertaining and exciting game despite having won several times.

NetHack offers a variety of display options. The options available to you will vary from port to port, depending on the capabilities of your hardware and software, and whether various compile-time options were enabled

when your executable was created. The three possible display options are: a monochrome character interface, a color character interface, and a graphical interface using small pictures called tiles. The two character interfaces allow fonts with other characters to be substituted, but the default assignments use standard ASCII characters to represent everything. There is no difference between the various display options with respect to game play. Because we cannot reproduce the tiles or colors in the Guidebook, and because it is common to all ports, we will use the default ASCII characters from the monochrome character display when referring to things you might see on the screen during your game.

In order to understand what is going on in NetHack, first you must understand what NetHack is doing with the screen. The NetHack screen replaces the "You see ..." descriptions of text adventure games. Figure 1 is a sample of what a NetHack screen might look like. The way the screen looks for you depends on your platform.

```
+------------------------------------------------------------------+
|The bat bites!                                                    |
|                                                                  |
|     ------                                                       |
|     |....|     ----------                                        |
|     |.<..|####...@...$.|                                         |
|     |....-#    |...B....+                                        |
|     |....|     |.d......|                                        |
|     ------      -------|--                                       |
|                                                                  |
|                                                                  |
|                                                                  |
|Player the Rambler    St:12 Dx:7 Co:18 In:11 Wi:9 Ch:15 Neutral |
|Dlvl:1 $:0 HP:9(12) Pw:3(3) AC:10 Exp:1/19 T:257 Weak           |
+---------------------------Figure-1------------------------------+
```

3.1   The message line

The top line of the screen is reserved for messages that describe things that are impossible to represent visually. If you see a "–More–" on the top line, this means that NetHack has another message to display on the screen, but it wants to make certain that you've read the one that is there first. To read the next message, just press the space bar.

To change how and what messages are shown on the message line, see "Configuring Message Types" and the verbose option.

3.2   The map

The rest of the screen is the map of the level as you have explored it so far. Each symbol on the screen represents something. You can set various graphics options to change some of the symbols the game uses; otherwise, the game will use default symbols. Here is a list of what the default symbols mean:

- and | The walls of a room, or an open door. Or a grave (|).

. The floor of a room, ice, or a doorless doorway.

A corridor, or iron bars, or a tree, or possibly a kitchen sink (if your dungeon has sinks), or a drawbridge.

> Stairs down: a way to the next level.

< Stairs up: a way to the previous level.

+ A closed door, or a spellbook containing a spell you may be able to learn.

@ Your character or a human.

$ A pile of gold.

^ A trap (once you have detected it).

) A weapon.

[A suit or piece of armor.

% Something edible (not necessarily healthy).

? A scroll.

/ A wand.

= A ring.

! A potion.

(A useful item (pick-axe, key, lamp. . .).

" An amulet or a spider web.

* A gem or rock (possibly valuable, possibly worthless).

' A boulder or statue.

0 An iron ball.

_ An altar, or an iron chain.

{ A fountain.

} A pool of water or moat or a pool of lava.

**** An opulent throne.

a-zA-Z and other symbols Letters and certain other symbols represent the various inhabitants of the Mazes of Menace. Watch out, they can be nasty and vicious. Sometimes, however, they can be helpful.

I This marks the last known location of an invisible or otherwise unseen monster. Note that the monster could have moved. The 'F' and 'm' commands may be useful here.

You need not memorize all these symbols; you can ask the game what any symbol represents with the '/' command (see the next section for more info).

3.3   The status lines

The bottom two lines of the screen contain several cryptic pieces of information describing your current status. If either status line becomes longer than the width of the screen, you might not see all of it. Here are explanations of what the various status items mean (though your configuration may not have all the status items listed below):

Rank Your character's name and professional ranking (based on the experience level, see below)

Strength A measure of your character's strength; one of your six basic attributes. A human character's attributes can range from 3 to 18 inclusive; non-humans may exceed these limits (occasionally you may get super-strengths of the form 18/xx, and magic can also cause attributes to exceed the normal limits). The higher your strength, the stronger

you are. Strength affects how successfully you perform physical tasks, how much damage you do in combat, and how much loot you can carry.

Dexterity Dexterity affects your chances to hit in combat, to avoid traps, and do other tasks requiring agility or manipulation of objects.

Constitution Constitution affects your ability to recover from injuries and other strains on your stamina. When strength is low or modest, constitution also affects how much you can carry. With sufficiently high strength, the contribution to carrying capacity from your constitution no longer matters.

Intelligence Intelligence affects your ability to cast spells and read spellbooks.

Wisdom Wisdom comes from your practical experience (especially when dealing with magic). It affects your magical energy.

Charisma Charisma affects how certain creatures react toward you. In particular, it can affect the prices shopkeepers offer you.

Alignment Lawful, Neutral, or Chaotic. Often, Lawful is taken as good and Chaotic as evil, but legal and ethical do not always co- incide. Your alignment influences how other monsters react toward you. Monsters of a like alignment are more likely to be non-aggressive, while those of an opposing alignment are more likely to be seriously offended at your presence.

Dungeon Level How deep you are in the dungeon. You start at level one and the number increases as you go deeper into the dungeon. Some levels are special, and are identified by a name and not a number. The Amulet of Yendor is reputed to be some- where beneath the twentieth level.

Gold The number of gold pieces you are openly carrying. Gold which you have concealed in containers is not counted.

Hit Points Your current and maximum hit points. Hit points indicate how much damage you can take before you die. The more you get hit in a fight, the lower they get. You can regain hit points by resting, or by using certain magical items or spells. The number in parentheses is the maximum number your hit points can reach.

Power Spell points. This tells you how much mystic energy (mana) you have available for spell casting. Again, resting will regenerate the amount available.

Armor Class A measure of how effectively your armor stops blows from unfriendly creatures. The lower this number is, the more effective the armor; it is quite possible to have negative armor class.

Experience Your current experience level and experience points. As you adventure, you gain experience points. At certain experience point totals, you gain an experience level. The more experienced you are, the better you fight and withstand magical attacks. Many dungeons show only your experience level here.

Time The number of turns elapsed so far, displayed if you have the time option set.

Status
- Hunger: your current hunger status. Values are Satiated, Not Hungry (or Normal), Hungry, Weak, and Fainting. Not shown when Normal.
- Encumbrance: an indication of how what you are carrying affects your ability to move. Values are Unencumbered, Encum- bered, Stressed, Strained, Overtaxed, and Overloaded. Not shown when Unencumbered.
- Fatal conditions: Stone (aka Petrifying, turning to stone), Slime (turning into green slime), Strngl (being strangled), FoodPois (suffering from acute food poisoning), TermIll (suffering from a terminal illness).
- Non-fatal conditions: Blind (can't see), Deaf (can't hear), Stun (stunned), Conf (confused), Hallu (hallucinating).
- Movement modifiers: Lev (levitating), Fly (flying), Ride (riding).
- Other conditions and modifiers exist, but there isn't enough room to display them with the other status fields.
- The 'X' command shows all relevant status conditions.

4 Commands

Commands can be initiated by typing one or two characters to which the command is bound to, or typing the command name in the extended commands entry. Some commands, like "search", do not require that any more

information be collected by NetHack. Other commands might require additional information, for example a direction, or an object to be used. For those commands that require additional information, NetHack will present you with either a menu of choices or with a command line prompt requesting information. Which you are presented with will depend chiefly on how you have set the menustyle option.

For example, a common question, in the form "What do you want to use? [a-zA-Z ?*]", asks you to choose an object you are carrying. Here, "a-zA-Z" are the inventory letters of your possible choices. Typing '?' gives you an inventory list of these items, so you can see what each letter refers to. In this exam- ple, there is also a '*' indicating that you may choose an object not on the list, if you wanted to use something unexpected. Typing a '*' lists your entire inventory, so you can see the inventory letters of every object you're carrying. Finally, if you change your mind and decide you don't want to do this command after all, you can press the ESC key to abort the command.

You can put a number before some commands to repeat them that many times; for example, "10s" will search ten times. If you have the number$_{\text{pad}}$ option set, you must type 'n' to prefix a count, so the example above would be typed "n10s" instead. Commands for which counts make no sense ignore them. In addition, movement commands can be prefixed for greater control (see be- low). To cancel a count or a prefix, press the ESC key.

The list of commands is rather long, but it can be read at any time during the game through the '?' command, which accesses a menu of helpful texts. Here are the default key bindings for your reference:

? Help menu: display one of several help texts available.

/ The "whatis" command, to tell what a symbol represents. You may choose to specify a location or type a symbol (or even a whole word) to explain. Specifying a location is done by moving the cursor to a particular spot on the map and then pressing one of '.', ',', ';', or ':'. '.' will explain the symbol at the chosen location, conditionally check for "More info?" depending upon whether the help option is on, and then you will be asked to pick another location; ',' will explain the symbol but skip any additional information, then let you pick another location; ';' will skip additional info and also not bother asking you to choose another location to examine; ':' will show additional info, if any, without asking for confirmation. When picking a location, pressing the ESC key will terminate this command, or pressing '?' will give a brief reminder about how it works.

If the autodescribe option is on, a short description of what you see at each location is shown as you move the cursor. Typing '#' while picking a location will toggle that option on or off. The whatis$_{coord}$ option controls whether the short description includes map coordinates.

Specifying a name rather than a location always gives any additional information available about that name.

You may also request a description of nearby monsters, all monsters currently displayed, nearby objects, or all objects. The whatis$_{coord}$ option controls which format of map coordinate is included with their descriptions.

& Tell what a command does.

< Go up to the previous level (if you are on a staircase or ladder).

> Go down to the next level (if you are on a staircase or ladder).

[yuhjklbn] Go one step in the direction indicated (see Figure 2). If you sense or remember a monster there, you will fight the monster instead. Only these one-step movement commands cause you to fight monsters; the others (below) are "safe."

```
y  k  u        7  8  9
 \ | /          \ | /
h- . -l        4- . -6
 / | \          / | \
b  j  n        1  2  3


 (if number_pad is set)
```

Figure 2

[YUHJKLBN] Go in that direction until you hit a wall or run into something.

m[yuhjklbn] Prefix: move without picking up objects or fighting (even if you remember a monster there).

A few non-movement commands use the 'm' prefix to request operating via menu (to temporarily override the menustyle:Traditional option). Primarily useful for ',' (pickup) when there is only one class of objects

present (where there won't be any "what kinds of objects?" prompt, so no opportunity to answer 'm' at that prompt).

A few other commands (eat food, offer sacrifice, apply tinning-kit) use the 'm' prefix to skip checking for applicable objects on the floor and go straight to checking inventory, or (for "#loot" to remove a saddle), skip containers and go straight to adjacent monsters. The prefix will make "#trav- el" command show a menu of interesting targets in sight. In debug mode (aka "wizard mode"), the 'm' prefix may also be used with the "#teleport" and "#wizlevelport" commands.

F[yuhjklbn] Prefix: fight a monster (even if you only guess one is there).

M[yuhjklbn] Prefix: move far, no pickup.

g[yuhjklbn] Prefix: move until something interesting is found.

G[yuhjklbn] or <CONTROL->[yuhjklbn] Prefix: same as 'g', but forking of corridors is not con- sidered interesting.

_ Travel to a map location via a shortest-path algorithm.

The shortest path is computed over map locations the hero knows about (e.g. seen or previously traversed). If there is no known path, a guess is made instead. Stops on most of the same conditions as the 'G' command, but without picking up objects, similar to the 'M' command. For ports with mouse support, the command is also invoked when a mouse-click takes place on a location other than the current position.

. Wait or rest, do nothing for one turn.

a Apply (use) a tool (pick-axe, key, lamp. . .). If used on a wand, that wand will be broken, releasing its magic in the process. Confirmation is required.

A Remove one or more worn items, such as armor. Use 'T' (take off) to take off only one piece of armor or 'R' (remove) to take off only one accessory.

^A Redo the previous command.

c Close a door.

C Call (name) a monster, an individual object, or a type of object. Same as extended command "#name".

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^C Panic button. Quit the game.

d Drop something. For example "d7a" means drop seven items of object a.

D Drop several things. In answer to the question

"What kinds of things do you want to drop? [!%= BUCXaium]"

you should type zero or more object symbols possibly followed by 'a' and/or 'i' and/or 'u' and/or 'm'. In addition, one or more of the blessed/uncursed/cursed groups may be typed:

- DB - drop all objects known to be blessed.
- DU - drop all objects known to be uncursed.
- DC - drop all objects known to be cursed.
- DX - drop all objects of unknown B/U/C status.
- Da - drop all objects, without asking for confirmation.
- Di - examine your inventory before dropping anything.
- Du - drop only unpaid objects (when in a shop).
- Dm - use a menu to pick which object(s) to drop.
- D%u - drop only unpaid food.

The last example shows a combination. There are three categories of object filtering: class ('!' for potions, '?' for scrolls, and so on), shop status ('u' for unpaid, in other words, owned by the shop), and bless/curse state ('B', 'U', 'C', and 'X' as shown above). If you specify more than one value in a category (such as "!?" for potions and scrolls or "BU" for blessed and uncursed), an inventory object will meet the criteria if it matches any of the specified values (so "!?" means '!' or '?'). If you specify more than one category, an inventory object must meet each of the category criteria (so "%u" means class '%' and unpaid 'u'). Lastly, you may specify multiple values within multiple categories: "!?BU" will select all potions and scrolls which are known to be blessed or uncursed. (In versions prior to 3.6, filter combinations behaved differently.)

^D Kick something (usually a door).

e Eat food.

Normally checks for edible item(s) on the floor, then if none are found or none are chosen, checks for edible item(s) in inventory. Precede 'e' with the 'm' prefix to bypass attempting to eat anything off the floor.

If you attempt to eat while already satiated, you might choke to death. If you risk it, you will be asked whether to "continue eating?" if you survive the first bite. You can set the paranoid$_{confirmation}$:eating option to require a response of yes instead of just y.

E Engrave a message on the floor.

E- Write in the dust with your fingers.

Engraving the word "Elbereth" will cause most monsters to not attack you hand-to-hand (but if you attack, you will rub it out); this is often useful to give yourself a breather.

f Fire (shoot or throw) one of the objects placed in your quiver (or quiver sack, or that you have at the ready). You may select ammunition with a previous 'Q' command, or let the computer pick something appropriate if autoquiver is true.

See also 't' (throw) for more general throwing and shooting.

i List your inventory (everything you're carrying).

I List selected parts of your inventory, usually be specifying the character for a particular set of objects, like '[' for armor or '!' for potions.

- I* - list all gems in inventory;
- Iu - list all unpaid items;
- Ix - list all used up items that are on your shopping bill;
- IB - list all items known to be blessed;
- IU - list all items known to be uncursed;
- IC - list all items known to be cursed;
- IX - list all items whose bless/curse status is unknown;
- I$ - count your money.

o Open a door.

O Set options.

A menu showing the current option values will be displayed. You can change most values simply by selecting the menu entry for the given option (ie, by typing its letter or clicking upon it, depending on your user interface). For the non-boolean choices, a further menu or prompt will appear once you've closed this menu. The available options are listed later in this Guidebook. Options are usually set before the game rather than with the 'O' command; see the section on options below.

^O Show overview.

Shortcut for "#overview": list interesting dungeon levels visited. (Prior to 3.6.0, '^{O}' was a debug mode command which listed the placement of all special levels. Use "#wizwhere" to run that command.)

p Pay your shopping bill.

P Put on an accessory (ring, amulet, or blindfold).

This command may also be used to wear armor. The prompt for which inventory item to use will only list accessories, but choosing an unlisted item of armor will attempt to wear it. (See the 'W' command below. It lists armor as the inventory choices but will accept an accessory and attempt to put that on.)

^P Repeat previous message.

Subsequent '^{P}'s repeat earlier messages. For some interfaces, the behavior can be varied via the msg_{window} option.

q Quaff (drink) something (potion, water, etc).

Q Select an object for your quiver, quiver sack, or just generally at the ready (only one of these is available at a time). You can then throw this (or one of these) using the 'f' command.

r Read a scroll or spellbook.

R Remove a worn accessory (ring, amulet, or blindfold).

If you're wearing more than one, you'll be prompted for which one to remove. When you're only wearing one, then by default it will be removed without asking, but you can set the $paranoid_{confirmation}$ option to require a prompt.

This command may also be used to take off armor. The prompt for which inventory item to remove only lists worn accessories, but an item of worn armor can be chosen. (See the 'T' command below. It lists armor as the inventory choices but will accept an accessory and attempt to remove it.)

^R Redraw the screen.

s Search for secret doors and traps around you. It usually takes several tries to find something.

Can also be used to figure out whether there is still a monster at an adjacent "remembered, unseen monster" marker.

S Save the game (which suspends play and exits the program). The saved game will be restored automatically the next time you play using the same character name.

In normal play, once a saved game is restored the file used to hold the saved data is deleted. In explore mode, once restoration is accomplished you are asked whether to keep or delete the file. Keeping the file makes it feasible to play for a while then quit without saving and later restore again.

There is no "save current game state and keep playing" command, not even in explore mode where saved game files can be kept and re-used.

t Throw an object or shoot a projectile.

There's no separate "shoot" command. If you throw an arrow while wielding a bow, you are shooting that arrow and any weapon skill bonus or penalty for bow applies. If you throw an arrow while not wielding a bow, you are throwing it by hand and it will generally be less effective than when shot.

See also 'f' (fire) for throwing or shooting an item preselected via the 'Q' (quiver) command.

T Take off armor.

If you're wearing more than one piece, you'll be prompted for which one to take off. (Note that this treats a cloak covering a suit and/or a shirt, or a suit covering a shirt, as if the underlying items weren't there.) When you're only wearing one, then by default it will be taken off without asking, but you can set the $paranoid_{confirmation}$ option to require a prompt.

This command may also be used to remove accessories. The prompt for which inventory item to take off only lists worn armor, but a worn accessory can be chosen. (See the 'R' command above. It lists accessories as the inventory choices but will accept an item of armor and attempt to take it off.)

^T Teleport, if you have the ability.

v Display version number.

V Display the game history.

w Wield weapon.

w- wield nothing, use your bare (or gloved) hands.

Some characters can wield two weapons at once; use the 'X' command (or the "#twoweapon" extended command) to do so.

W Wear armor.

This command may also be used to put on an accessory (ring, amulet, or blindfold). The prompt for which inventory item to use will only list armor, but choosing an unlisted accessory will attempt to put it on. (See the 'P' command above. It lists accessories as the inventory choices but will accept an item of armor and attempt to wear it.)

x Exchange your wielded weapon with the item in your alternate weapon slot.

The latter is used as your secondary weapon when engaging in two-weapon combat. Note that if one of these slots is empty, the exchange still takes place.

X Toggle two-weapon combat, if your character can do it. Also available via the "#twoweapon" extended command.

(In versions prior to 3.6 this was the command to switch from normal play to "explore mode", also known as "discovery mode", which has now been moved to "#exploremode".)

^X Display basic information about your character.

Displays name, role, race, gender (unless role name makes that redundant, such as Caveman or Priestess), and alignment, along with your patron deity and his or her opposition. It also shows most of the various items of information from the status line(s) in a less terse form,

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including several additional things which don't appear in the normal status display due to space considerations.

In normal play, that's all that 'X' displays. In explore mode, the role and status feedback is augmented by the information provided by enlightenment magic.

z Zap a wand.

z. to aim at yourself, use '.' for the direction.

Z Zap (cast) a spell.

Z. to cast at yourself, use '.' for the direction.

^Z Suspend the game (UNIX[1] versions with job control only).

: Look at what is here.

; Show what type of thing a visible symbol corresponds to.

, Pick up some things from the floor beneath you. May be preceded by 'm' to force a selection menu.

@ Toggle the autopickup option on and off.

^ Ask for the type of an adjacent trap you found earlier.

) Tell what weapon you are wielding.

[Tell what armor you are wearing.

= Tell what rings you are wearing.

" Tell what amulet you are wearing.

(Tell what tools you are using.

* Tell what equipment you are using. Combines the preceding five type-specific commands into one.

$ Count your gold pieces.

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[1](R)UNIX is a registered trademark of The Open Group

+ List the spells you know.

> Using this command, you can also rearrange the order in which your spells are listed, either by sorting the entire list or by picking one spell from the menu then picking another to swap places with it. Swapping pairs of spells changes their casting letters, so the change lasts after the current '+' command finishes. Sorting the whole list is temporary. To make the most recent sort order persist beyond the current '+' command, choose the sort option again and then pick "reassign casting letters". (Any spells learned after that will be added to the end of the list rather than be inserted into the sorted ordering.)

\ Show what types of objects have been discovered.

' Show discovered types for one class of objects.

! Escape to a shell.

Perform an extended command.

As you can see, the authors of NetHack used up all the let- ters, so this is a way to introduce the less frequently used com- mands. What extended commands are available depends on what fea- tures the game was compiled with.

#adjust Adjust inventory letters (most useful when the fixinv option is "on"). Autocompletes. Default key is 'M-a'.

This command allows you to move an item from one particular inventory slot to another so that it has a letter which is more meaningful for you or that it will appear in a particu- lar location when inventory listings are displayed. You can move to a currently empty slot, or if the destination is oc- cupied – and won't merge – the item there will swap slots with the one being moved. "#adjust" can also be used to split a stack of objects; when choosing the item to adjust, enter a count prior to its letter.

Adjusting without a count used to collect all compatible stacks when moving to the destination. That behavior has been changed; to gather com- patible stacks, "#adjust" a stack into its own inventory slot. If it has a name assigned, other stacks with the same name or with no name will merge provided that all their other attributes match. If it does not have a name, only other stacks with no name are eligi- ble. In either case, otherwise com- patible stacks with a different name will not be merged. This contrasts with us- ing "#adjust" to move from one slot to a different slot. In that situation, moving (no count given) a compatible stack will merge if either stack has a

name when the other doesn't and give that name to the result, while splitting (count given) will ignore the source stack's name when deciding whether to merge with the destination stack.

#annotate Allows you to specify one line of text to associate with the current dungeon level. All levels with annotations are dis- played by the "#overview" command. Autocompletes. Default key is 'M-A', and also '^{N}' if number$_{pad}$ is on.

#apply Apply (use) a tool such as a pick-axe, a key, or a lamp. Default key is 'a'.

If the tool used acts on items on the floor, using the 'm' prefix skips those items.

If used on a wand, that wand will be broken, releasing its magic in the process. Confirmation is required.

#attributes Show your attributes. Default key is '^{X}'.

#autopickup Toggle the autopickup option on/off. Default key is '@'.

#call Call (name) a monster, or an object in inventory, on the floor, or in the discoveries list, or add an annotation for the current level (same as "#annotate"). Default key is 'C'.

#cast Cast a spell. Default key is 'Z'.

#chat Talk to someone. Default key is 'M-c'.

#close Close a door. Default key is 'c'.

#conduct List voluntary challenges you have maintained. Autocompletes. Default key is 'M-C'.

See the section below entitled "Conduct" for details.

#dip Dip an object into something. Autocompletes. Default key is 'M-d'.

#down Go down a staircase. Default key is '>'.

#drop Drop an item. Default key is 'd'.

#droptype Drop specific item types. Default key is 'D'.

#eat Eat something. Default key is 'e'. The 'm' prefix skips eating items on the floor.

#engrave Engrave writing on the floor. Default key is 'E'.

#enhance Advance or check weapon and spell skills. Autocompletes. Default key is 'M-e'.

#exploremode Enter the explore mode.

Requires confirmation; default response is n (no). To real- ly switch to explore mode, respond with y. You can set the paranoid$_{\text{confirmation}}$:quit option to require a response of yes instead.

#fire Fire ammunition from quiver. Default key is 'f'.

#force Force a lock. Autocompletes. Default key is 'M-f'.

#glance Show what type of thing a map symbol corresponds to. Default key is ';'.

#help Show the help menu. Default key is '?', and also 'h' if number$_{\text{pad}}$ is on.

#herecmdmenu Show a menu of possible actions in your current location.

#history Show long version and game history. Default key is 'V'.

#inventory Show your inventory. Default key is 'i'.

#inventtype Inventory specific item types. Default key is 'I'.

#invoke Invoke an object's special powers. Autocompletes. Default key is 'M-i'.

#jump Jump to another location. Autocompletes. Default key is 'M-j', and also 'j' if number$_{\text{pad}}$ is on.

#kick Kick something. Default key is '$^{\text{D}}$', and 'k' if number$_{\text{pad}}$ is on.

#known Show what object types have been discovered. Default key is '\'.

#knownclass Show discovered types for one class of objects. Default key is '"'.

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#levelchange Change your experience level. Autocompletes. Debug mode only.

#lightsources Show mobile light sources. Autocompletes. Debug mode only.

#look Look at what is here, under you. Default key is ':'.

#loot Loot a box or bag on the floor beneath you, or the saddle from a steed standing next to you. Autocompletes. Precede with the 'm' prefix to skip containers at your location and go directly to removing a saddle. Default key is 'M-l', and also 'l' if number$_{\text{pad}}$ is on.

#monster Use a monster's special ability (when polymorphed into monster form). Autocompletes. Default key is 'M-m'.

#name Name a monster, an individual object, or a type of object. Same as "#call". Autocompletes. Default keys are 'N', 'M- n', and 'M-N'.

#offer Offer a sacrifice to the gods. Autocompletes. Default key is 'M-o'.

You'll need to find an altar to have any chance at success. Corpses of recently killed monsters are the fodder of choice.

The 'm' prefix skips offering any items which are on the al- tar.

#open Open a door. Default key is 'o'.

#options Show and change option settings. Default key is 'O'.

#overview Display information you've discovered about the dungeon. Any visited level (unless forgotten due to amnesia) with an annotation is included, and many things (altars, thrones, fountains, and so on; extra stairs leading to another dun- geon branch) trigger an automatic annotation. If dungeon overview is chosen during end-of-game disclosure, every vis- ited level will be included regardless of annotations. Au- tocompletes. Default keys are '^{O}', and 'M-O'.

#panic Test the panic routine. Terminates the current game. Auto- completes. Debug mode only.

Asks for confirmation; default is n (no); continue playing. To really panic, respond with y. You can set the para- noid$_{confirmation}$:quit option to require a response of yes instead.

#pay Pay your shopping bill. Default key is 'p'.

#pickup Pick up things at the current location. Default key is ','. The 'm' prefix forces use of a menu.

#polyself Polymorph self. Autocompletes. Debug mode only.

#pray Pray to the gods for help. Autocompletes. Default key is 'M-p'.

Praying too soon after receiving prior help is a bad idea. (Hint: enter- ing the dungeon alive is treated as having re- ceived help. You probably shouldn't start off a new game by praying right away.) Since using this com- mand by accident can cause trouble, there is an option to make you confirm your intent before praying. It is enabled by default, and you can reset the paranoid$_{confirmation}$ option to disable it.

#prevmsg Show previously displayed game messages. Default key is '^{P}'.

#puton Put on an accessory (ring, amulet, etc). Default key is 'P'.

#quaff Quaff (drink) something. Default key is 'q'.

#quit Quit the program without saving your game. Autocompletes. De- fault key is 'M-q'.

Since using this command by accident would throw away the current game, you are asked to confirm your intent before quitting. Default response is n (no); continue playing. To really quit, respond with y. You can set the paranoid$_{con}$- firmation:quit option to require a response of yes instead.

#quiver Select ammunition for quiver. Default key is 'Q'.

#read Read a scroll, a spellbook, or something else. Default key is 'r'.

#redraw Redraw the screen. Default key is '^{R}', and also '^{L}' if number$_{pad}$ is on.

#remove Remove an accessory (ring, amulet, etc). Default key is 'R'.

#ride Ride (or stop riding) a saddled creature. Autocompletes. Default key is 'M-R'.

#rub Rub a lamp or a stone. Autocompletes. Default key is 'M- r'.

#save Save the game and exit the program. Default key is 'S'.

#search Search for traps and secret doors around you. Default key is 's'.

#seeall Show all equipment in use. Default key is '*'.

#seeamulet Show the amulet currently worn. Default key is '"'.

#seearmor Show the armor currently worn. Default key is '['.

#seegold Count your gold. Default key is '$'.

#seenv Show seen vectors. Autocompletes. Debug mode only.

#seerings Show the ring(s) currently worn. Default key is '='.

#seespells List and reorder known spells. Default key is '+'.

#seetools Show the tools currently in use. Default key is '('.

#seetrap Show the type of an adjacent trap. Default key is '^'.

#seeweapon Show the weapon currently wielded. Default key is ')'.

#shell Do a shell escape. Default key is '!'.

#sit Sit down. Autocompletes. Default key is 'M-s'.

#stats Show memory usage statistics. Autocompletes. Debug mode only.

#suspend Suspend the game. Default key is '^{Z}'.

#swap Swap wielded and secondary weapons. Default key is 'x'.

#takeoff Take off one piece of armor. Default key is 'T'.

#takeoffall Remove all armor. Default key is 'A'.

#teleport Teleport around the level. Default key is '^{T}'.

#terrain Show bare map without displaying monsters, objects, or traps. Autocompletes.

#therecmdmenu Show a menu of possible actions in a location next to you.

#throw Throw something. Default key is 't'.

#timeout Look at the timeout queue. Autocompletes. Debug mode only.

#tip Tip over a container (bag or box) to pour out its contents. Autocompletes. Default key is 'M-T'. The 'm' prefix makes the command use a menu.

#travel Travel to a specific location on the map. Default key is '_'. Using the "request menu" prefix shows a menu of inter- esting targets in

sight without asking to move the cursor. When picking a target with cursor and the autodescribe

option is on, the top line will show "(no travel path)" if your character does not know of a path to that location.

#turn Turn undead away. Autocompletes. Default key is 'M-t'.

#twoweapon Toggle two-weapon combat on or off. Autocompletes. Default key is 'X', and also 'M-2' if number$_{pad}$ is off.

Note that you must use suitable weapons for this type of combat, or it will be automatically turned off.

#untrap Untrap something (trap, door, or chest). Default key is 'M- u', and 'u' if number$_{pad}$ is on.

In some circumstances it can also be used to rescue trapped monsters.

#up Go up a staircase. Default key is '<'.

#vanquished List vanquished monsters. Autocompletes. Debug mode only.

#version Print compile time options for this version of NetHack. Autocompletes. Default key is 'M-v'.

#versionshort Show version string. Default key is 'v'.

#vision Show vision array. Autocompletes. Debug mode only.

#wait Rest one move while doing nothing. Default key is '.', and also ' ' if rest$_{onspace}$ is on.

#wear Wear a piece of armor. Default key is 'W'.

#whatdoes Tell what a key does. Default key is '&'.

#whatis Show what type of thing a symbol corresponds to. Default key is '/'.

#wield Wield a weapon. Default key is 'w'.

#wipe Wipe off your face. Autocompletes. Default key is 'M-w'.

#wizbury Bury objects under and around you. Autocompletes. Debug mode only.

#wizdetect Search for hidden things (secret doors or traps or unseen monsters) within a modest radius. Autocompletes. Debug mode only. Default key is 'E'.

#wizgenesis Create a monster. May be prefixed by a count to create more than one. Autocompletes. Debug mode only. Default key is 'G'.

#wizidentify Identify all items in inventory. Autocompletes. Debug mode only. Default key is 'I'.

#wizintrinsic Set one or more intrinsic attributes. Autocompletes. Debug mode only.

#wizlevelport Teleport to another level. Autocompletes. Debug mode only. Default key is '^{V}'.

#wizmap Map the level. Autocompletes. Debug mode only. Default key is '^{F}'.

#wizrumorcheck Verify rumor boundaries. Autocompletes. Debug mode only.

#wizsmell Smell monster. Autocompletes. Debug mode only.

#wizwhere Show locations of special levels. Autocompletes. Debug mode only.

#wizwish Wish for something. Autocompletes. Debug mode only. Default key is '^{W}'.

#wmode Show wall modes. Autocompletes. Debug mode only.

#zap Zap a wand. Default key is 'z'.

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#? Help menu: get the list of available extended commands.

If your keyboard has a meta key (which, when pressed in com- bination with another key, modifies it by setting the "meta" [8th, or "high"] bit), you can invoke many extended commands by meta-ing the first letter of the command.

In NT, OS/2, PC and ST NetHack, the "Alt" key can be used in this fashion; on the Amiga, set the altmeta option to get this behavior. On other systems, if typing "Alt" plus another key transmits a two character sequence consisting of an Escape fol- lowed by the other key, you may set the altmeta option to have NetHack combine them into meta+key.

M-? #? (not supported by all platforms)

M-2 #twoweapon (unless the number$_{pad}$ option is enabled)

M-a #adjust

M-A #annotate

M-c #chat

M-C #conduct

M-d #dip

M-e #enhance

M-f #force

M-i #invoke

M-j #jump

M-l #loot

M-m #monster

M-n #name

M-o #offer

M-O #overview

M-p #pray

M-q #quit

M-r #rub

M-R #ride

M-s #sit

M-t #turn

M-T #tip

M-u #untrap

M-v #version

M-w #wipe

If the number$_{pad}$ option is on, some additional letter com- mands are available:

h #help

j #jump

k #kick

l #loot

N #name

u #untrap

5   5. Rooms and corridors

Rooms and corridors in the dungeon are either lit or dark. Any lit areas within your line of sight will be displayed; dark areas are only displayed if they are within one space of you. Walls and corridors remain on the map as you explore them.

Secret corridors are hidden. You can find them with the 's' (search) command.

6   5.1. Doorways

Doorways connect rooms and corridors. Some doorways have no doors; you can walk right through. Others have doors in them, which may be open, closed, or locked. To open a closed door, use the 'o' (open) command; to close it again, use the 'c' (close) command.

You can get through a locked door by using a tool to pick the lock with the 'a' (apply) command, or by kicking it open with the 'D' (kick) command.

Open doors cannot be entered diagonally; you must approach them straight on, horizontally or vertically. Doorways without doors are not restricted in this fashion.

Doors can be useful for shutting out monsters. Most mon- sters cannot open doors, although a few don't need to (for exam- ple, ghosts can walk through doors).

Secret doors are hidden. You can find them with the 's' (search) command. Once found they are in all ways equivalent to normal doors.

5.2. Traps ('^')

There are traps throughout the dungeon to snare the unwary delver. For example, you may suddenly fall into a pit and be stuck for a few turns trying to climb out. Traps don't appear on your map until you see one triggered by moving onto it, see some- thing fall into it, or you discover it with the 's' (search) com- mand. Monsters can fall prey to traps, too, which can be a very useful defensive strategy.

There is a special pre-mapped branch of the dungeon based on the classic computer game "Sokoban." The goal is to push the boulders into the pits or holes. With careful foresight, it is possible to complete all of the levels ac- cording to the tradi- tional rules of Sokoban. Some allowances are permitted in case the player gets stuck; however, they will lower your luck.

5.3. Stairs and ladders ('<', '>')

In general, each level in the dungeon will have a staircase going up ('<') to the previous level and another going down ('>') to the next level. There are some exceptions though. For in- stance, fairly early in the dungeon you will find a level with two down staircases, one continuing into the dungeon and the oth- er branching into an area known as the Gnomish Mines. Those mines eventually hit a dead end, so after exploring them (if you choose to do so), you'll need to climb back up to the main dun- geon.

When you traverse a set of stairs, or trigger a trap which sends you to another level, the level you're leaving will be de- activated and stored in a file on disk. If you're moving to a previously visited level, it will be loaded from its file on disk and reactivated. If you're moving to a level which has not yet been visited, it will be created (from scratch for most random levels, from a template for some "special" levels, or loaded from the remains of an earlier game for a "bones" level as briefly de- scribed below). Monsters are only active on the current level; those on other levels are essentially placed

into stasis.

Ordinarily when you climb a set of stairs, you will arrive on the corresponding staircase at your destination. However,

pets (see below) and some other monsters will follow along if they're close enough when you travel up or down stairs, and occa- sionally one of these creatures will displace you during the climb. When that occurs, the pet or other monster will arrive on the staircase and you will end up nearby.

Ladders serve the same purpose as staircases, and the two types of inter-level connections are nearly indistinguishable during game play.

5.4. Shops and shopping

Occasionally you will run across a room with a shopkeeper near the door and many items lying on the floor. You can buy items by picking them up and then using the 'p' command. You can inquire about the price of an item prior to picking it up by us- ing the "#chat" command while standing on it. Using an item pri- or to paying for it will incur a charge, and the shopkeeper won't allow you to leave the shop until you have paid any debt you owe.

You can sell items to a shopkeeper by dropping them to the floor while inside a shop. You will either be offered an amount of gold and asked whether you're willing to sell, or you'll be told that the shopkeeper isn't interested (generally, your item needs to be compatible with the type of merchandise carried by the shop).

If you drop something in a shop by accident, the shopkeeper will usually claim ownership without offering any compensation. You'll have to buy it back if you want to reclaim it.

Shopkeepers sometimes run out of money. When that happens, you'll be offered credit instead of gold when you try to sell something. Credit can be used to pay for purchases, but it is only good in the shop where it was obtained; other shopkeepers won't honor it. (If you happen to find a "credit card" in the dungeon, don't bother trying to use it in shops; shopkeepers will not accept it.)

The '$' command, which reports the amount of gold you are carrying (in inventory, not inside bags or boxes), will also show current shop debt or credit, if any. The "Iu" command lists un- paid items (those which still belong to the shop) if you are car- rying any. The "Ix" command shows an inventory-like display of any unpaid items which have been used up, along with other shop fees, if any.

5.4.1. Shop idiosyncrasies

Several aspects of shop behavior might be unexpected.

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- The price of a given item can vary due to a variety of factors.

- A shopkeeper treats the spot immediately inside the door as if it were outside the shop.

- While the shopkeeper watches you like a hawk, he will generally ignore any other customers.

- If a shop is "closed for inventory," it will not open of its own accord.

- Shops do not get restocked with new items, regardless of inven- tory depletion.

- Monsters

  Monsters you cannot see are not displayed on the screen.

Beware! You may suddenly come upon one in a dark place. Some magic items can help you locate them before they locate you (which some monsters can do very well).

The commands '/' and ';' may be used to obtain information about those monsters who are displayed on the screen. The com- mand "#name" (by default bound to 'C'), allows you to assign a name to a monster, which may be useful to help distinguish one from another when multiple monsters are present. Assigning a name which is just a space will remove any prior name.

The extended command "#chat" can be used to interact with an adjacent monster. There is no actual dialog (in other words, you don't get to choose what you'll say), but chatting with some mon- sters such as a shopkeeper or the Oracle of Delphi can produce useful results.

6.1. Fighting

If you see a monster and you wish to fight it, just attempt to walk into it. Many monsters you find will mind their own business unless you attack them. Some of them are very dangerous when angered. Remember: discretion is the better part of valor.

In most circumstances, if you attempt to attack a peaceful monster by moving into its location, you'll be asked to confirm your intent. By default an answer of 'y' acknowledges that in- tent, which can be error prone if you're using 'y' to move. You can set the paranoid$_{confirmation}$ option to require a response of "yes" instead.

If you can't see a monster (if it is invisible, or if you are blinded), the symbol 'I' will be shown when you learn of its presence. If you attempt to walk into it, you will try to fight it just like a monster that you can see; of course, if the mon- ster has moved, you will attack empty air. If you guess that the monster has moved and you don't wish to fight, you can use the 'm' command to move without fighting; likewise, if you don't re- member a monster but want to try fighting anyway, you can use the

'F' command.

6.2. Your pet

You start the game with a little dog ('d'), kitten ('f'), or pony ('u'), which follows you about the dungeon and fights mon- sters with you. Like you, your pet needs food to survive. Dogs and cats usually feed themselves on fresh carrion and other meats; horses need vegetarian food which is harder to come by. If you're worried about your pet or want to train it, you can feed it, too, by throwing it food. A properly trained pet can be very useful under certain circumstances.

Your pet also gains experience from killing monsters, and can grow over time, gaining hit points and doing more damage. Initially, your pet may even be better at killing things than you, which makes pets useful for low-level characters.

Your pet will follow you up and down staircases if it is next to you when you move. Otherwise your pet will be stranded and may become wild. Similarly, when you trigger certain types of traps which alter your location (for instance, a trap door which drops you to a lower dungeon level), any adjacent pet will accompany you and any non-adjacent pet will be left behind. Your pet may trigger such traps itself; you will not be carried along with it even if adjacent at the time.

6.3. Steeds

Some types of creatures in the dungeon can actually be rid- den if you have the right equipment and skill. Convincing a wild beast to let you saddle it up is difficult to say the least. Many a dungeoneer has had to resort to magic and wizardry in or- der to forge the alliance. Once you do have the beast under your control however, you can easily climb in and out of the saddle with the "#ride" command. Lead the beast around the dungeon when riding, in the same manner as you would move yourself. It is the beast that you will see displayed on the map.

Riding skill is managed by the "#enhance" command. See the section on Weapon proficiency for more information about that.

Use the 'a' (apply) command and pick a saddle in your inven- tory to attempt to put that saddle on an adjacent creature. If successful, it will be transferred to that creature's inventory.

Use the "#loot" command while adjacent to a saddled creature to try to remove the saddle from that creature. If successful, it will be transferred to your inventory.

6.4. Bones levels

You may encounter the shades and corpses of other adventur- ers (or even former incarnations of yourself!) and their personal

effects. Ghosts are hard to kill, but easy to avoid, since they're slow and do little damage. You can plunder the deceased adventurer's possessions; however, they are likely to be cursed. Beware of whatever killed the former player; it is probably still lurking around, gloating over its last victory.

6.5. Persistence of Monsters

Monsters (a generic reference which also includes humans and pets) are only shown while they can be seen or otherwise sensed. Moving to a location where you can't see or sense a monster any more will result in it disappearing from your map, similarly if it is the one who moved rather than you.

However, if you encounter a monster which you can't see or sense – perhaps it is invisible and has just tapped you on the noggin – a special "re-membered, unseen monster" marker will be displayed at the location where you think it is. That will per- sist until you have proven that there is no monster there, even if the unseen monster moves to another location or you move to a spot where the marker's location ordinarily wouldn't be seen any more.

1. Objects

When you find something in the dungeon, it is common to want to pick it up. In NetHack, this is accomplished automatically by walking over the object (unless you turn off the autopickup op- tion (see below), or move with the 'm' prefix (see above)), or manually by using the ',' command.

If you're carrying too many items, NetHack will tell you so and you won't be able to pick up anything more. Otherwise, it will add the object(s) to your pack and tell you what you just picked up.

As you add items to your inventory, you also add the weight of that object to your load. The amount that you can carry de- pends on your

strength and your constitution. The stronger and sturdier you are, the less the additional load will affect you. There comes a point, though, when the weight of all of that stuff you are carrying around with you through the dungeon will encum- ber you. Your reactions will get slower and you'll burn calories faster, requiring food more frequently to cope with it. Eventu- ally, you'll be so overloaded that you'll either have to discard some of what you're carrying or collapse under its weight.

NetHack will tell you how badly you have loaded yourself. If you are encumbered, one of the conditions "Burdened", "Stressed", "Strained", "Overtaxed" or "Overloaded" will be shown on the bottom line status display.

When you pick up an object, it is assigned an inventory let- ter. Many commands that operate on objects must ask you to find

out which object you want to use. When NetHack asks you to choose a particular object you are carrying, you are usually pre- sented with a list of inventory letters to choose from (see Com- mands, above).

Some objects, such as weapons, are easily differentiated. Others, like scrolls and potions, are given descriptions which vary according to type. During a game, any two objects with the same description are the same type. However, the descriptions will vary from game to game.

When you use one of these objects, if its effect is obvious, NetHack will remember what it is for you. If its effect isn't extremely obvious, you will be asked what you want to call this type of object so you will recognize it later. You can also use the "#name" command, for the same purpose at any time, to name all objects of a particular type or just an individual object. When you use "#name" on an object which has already been named, specifying a space as the value will remove the prior name in- stead of assigning a new one.

7.1. Curses and Blessings

Any object that you find may be cursed, even if the object is otherwise helpful. The most common effect of a curse is being stuck with (and to) the item. Cursed weapons weld themselves to your hand when wielded, so you cannot unwield them. Any cursed item you wear is not removable by ordinary means. In addition, cursed arms and armor usually, but not always, bear negative en- chantments that make them less effective in combat. Other cursed objects may act poorly or detrimentally in other ways.

Objects can also be blessed. Blessed items usually work better or more beneficially than normal uncursed items. For ex- ample, a blessed weapon will do more damage against demons.

Objects which are neither cursed nor blessed are referred to as uncursed. They could just as easily have been described as unblessed, but the uncursed designation is what you will see within the game. A "glass half full versus glass half empty" situation; make of that what you will.

There are magical means of bestowing or removing curses upon objects, so even if you are stuck with one, you can still have the curse lifted and the item removed. Priests and Priestesses have an innate sensitivity to this property in any object, so they can more easily avoid cursed objects than other character roles.

An item with unknown status will be reported in your inven- tory with no prefix. An item which you know the state of will be distinguished in your inventory by the presence of the word "cursed", "uncursed" or "blessed" in the description of the item. In some cases "uncursed" will be omitted as being redundant when

enough other information is displayed. The implicit$_{uncursed}$ op- tion can be used to control this; toggle it off to have "un- cursed" be displayed even when that can be deduced from other at- tributes.

7.2. Weapons (')')

Given a chance, most monsters in the Mazes of Menace will gratuitously try to kill you. You need weapons for self-defense (killing them first). With- out a weapon, you do only 1-2 hit points of damage (plus bonuses, if any). Monk characters are an exception; they normally do more damage with bare (or gloved) hands than they do with weapons.

There are wielded weapons, like maces and swords, and thrown weapons, like arrows and spears. To hit monsters with a weapon, you must wield it and attack them, or throw it at them. You can simply elect to throw a spear. To shoot an arrow, you should first wield a bow, then throw the arrow. Crossbows shoot cross- bow bolts. Slings hurl rocks and (other) stones (like gems).

Enchanted weapons have a "plus" (or "to hit enhancement" which can be either positive or negative) that adds to your chance to hit and the damage you do to a monster. The only way to determine a weapon's enchantment is to have it magically iden- tified somehow. Most weapons are subject to some type of damage like rust. Such "erosion" damage can be repaired.

The chance that an attack will successfully hit a monster, and the amount

of damage such a hit will do, depends upon many factors. Among them are: type of weapon, quality of weapon (en- chantment and/or erosion), experience level, strength, dexterity, encumbrance, and proficiency (see below). The monster's armor class – a general defense rating, not necessarily due to wearing of armor – is a factor too; also, some monsters are particularly vulnerable to certain types of weapons.

Many weapons can be wielded in one hand; some require both hands. When wielding a two-handed weapon, you can not wear a shield, and vice versa. When wielding a one-handed weapon, you can have another weapon ready to use by setting things up with the 'x' command, which exchanges your primary (the one being wielded) and alternate weapons. And if you have proficiency in the "two weapon combat" skill, you may wield both weapons simul- taneously as primary and secondary; use the 'X' command to engage or disengage that. Only some types of characters (barbarians, for instance) have the necessary skill available. Even with that skill, using two weapons at once incurs a penalty in the chance to hit your target compared to using just one weapon at a time.

There might be times when you'd rather not wield any weapon at all. To accomplish that, wield '-', or else use the 'A' com- mand which allows you to unwield the current weapon in addition to taking off other worn items.

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Those of you in the audience who are AD&D players, be aware that each weapon which existed in AD&D does roughly the same dam- age to monsters in NetHack. Some of the more obscure weapons (such as the aklys, lucern hammer, and bec-de-corbin) are defined in an appendix to Unearthed Arcana, an AD&D supplement.

The commands to use weapons are 'w' (wield), 't' (throw), 'f' (fire, an alternate way of throwing), 'Q' (quiver), 'x' (ex- change), 'X' (twoweapon), and "#enhance" (see below).

7.2.1. Throwing and shooting

You can throw just about anything via the 't' command. It will prompt for the item to throw; picking '?' will list things in your inventory which are considered likely to be thrown, or picking '*' will list your entire inventory. After you've chosen what to throw, you will be prompted for a direction rather than for a specific target. The distance something can be thrown de- pends mainly on the type of object and your strength. Arrows can be thrown by hand, but can be thrown much farther and will be more likely to hit when thrown while you are wielding a bow.

You can simplify the throwing operation by using the 'Q' command to

select your preferred "missile", then using the 'f' command to throw it. You'll be prompted for a direction as above, but you don't have to specify which item to throw each time you use 'f'. There is also an option, autoquiver, which has NetHack choose another item to automatically fill your quiver (or quiver sack, or have at the ready) when the inventory slot used for 'Q' runs out.

Some characters have the ability to fire a volley of multi- ple items in a single turn. Knowing how to load several rounds of ammunition at once – or hold several missiles in your hand – and still hit a target is not an easy task. Rangers are among those who are adept at this task, as are those with a high level of proficiency in the relevant weapon skill (in bow skill if you're wielding one to shoot arrows, in crossbow skill if you're wielding one to shoot bolts, or in sling skill if you're wielding one to shoot stones). The number of items that the character has a chance to fire varies from turn to turn. You can explicitly limit the number of shots by using a numeric prefix before the 't' or 'f' command. For example, "2f" (or "n2f" if using num- ber$_{pad}$ mode) would ensure that at most 2 arrows are shot even if you could have fired 3. If you specify a larger number than would have been shot ("4f" in this example), you'll just end up shooting the same number (3, here) as if no limit had been speci- fied. Once the volley is in motion, all of the items will travel in the same direction; if the first ones kill a monster, the oth- ers can still continue beyond that spot.

7.2.2. Weapon proficiency

You will have varying degrees of skill in the weapons avail- able. Weapon proficiency, or weapon skills, affect how well you can use particular types of weapons, and you'll be able to im- prove your skills as you progress through a game, depending on your role, your experience level, and use of the weapons.

For the purposes of proficiency, weapons have been divided up into var- ious groups such as daggers, broadswords, and polearms. Each role has a limit on what level of proficiency a character can achieve for each group. For instance, wizards can become highly skilled in daggers or staves but not in swords or bows.

The "#enhance" extended command is used to review current weapons proficiency (also spell proficiency) and to choose which skill(s) to improve when you've used one or more skills enough to become eligible to do so. The skill rankings are "none" (some- times also referred to as "restricted", because you won't be able to advance), "unskilled", "basic", "skilled", and "expert". Re- stricted skills simply will not appear in the list shown by

"#en- hance". (Divine intervention might unrestrict a particular skill, in which case it will start at unskilled and be limited to basic.) Some characters can enhance their barehanded combat or martial arts skill beyond expert to "master" or "grand master".

Use of a weapon in which you're restricted or unskilled will incur a modest penalty in the chance to hit a monster and also in the amount of damage done when you do hit; at basic level, there is no penalty or bonus; at skilled level, you receive a modest bonus in the chance to hit and amount of damage done; at expert level, the bonus is higher. A successful hit has a chance to boost your training towards the next skill level (unless you've already reached the limit for this skill). Once such training reaches the threshold for that next level, you'll be told that you feel more confident in your skills. At that point you can use "#enhance" to increase one or more skills. Such skills are not increased automatically because there is a limit to your to- tal overall skills, so you need to actively choose which skills to enhance and which to ignore.

7.2.3. Two-Weapon combat

Some characters can use two weapons at once. Setting things up to do so can seem cumbersome but becomes second nature with use. To wield two weapons, you need to use the "#twoweapon" com- mand. But first you need to have a weapon in each hand. (Note that your two weapons are not fully equal; the one in the hand you normally wield with is considered primary and the other one is considered secondary. The most noticeable difference is after you stop – or before you begin, for that matter – wielding two weapons at once. The primary is your wielded weapon and the sec- ondary is just an item in your inventory that's been designated

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as alternate weapon.)

If your primary weapon is wielded but your off hand is empty or has the wrong weapon, use the sequence 'x', 'w', 'x' to first swap your primary into your off hand, wield whatever you want as secondary weapon, then swap them both back into the intended hands. If your secondary or alternate weapon is correct but your primary one is not, simply use 'w' to wield the primary. Lastly, if neither hand holds the correct weapon, use 'w', 'x', 'w' to first wield the intended secondary, swap it to off hand, and then wield the primary.

The whole process can be simplified via use of the push- weapon option. When it is enabled, then using 'w' to wield some- thing causes the currently wielded weapon to become your alter- nate weapon. So the sequence 'w', 'w' can be used to first wield the weapon you intend to be secondary, and then

wield the one you want as primary which will push the first into secondary posi- tion.

When in two-weapon combat mode, using the 'X' command tog- gles back to single-weapon mode. Throwing or dropping either of the weapons or having one of them be stolen or destroyed will al- so make you revert to single-weapon combat.

7.3. Armor ('[')

Lots of unfriendly things lurk about; you need armor to pro- tect yourself from their blows. Some types of armor offer better protection than others. Your armor class is a measure of this protection. Armor class (AC) is mea- sured as in AD&D, with 10 be- ing the equivalent of no armor, and lower numbers meaning better armor. Each suit of armor which exists in AD&D gives the same protection in NetHack. Here is an (incomplete) list of the armor classes provided by various suits of armor: dragon scale mail 1 plate mail 3 crystal plate mail 3 bronze plate mail 4 splint mail 4 banded mail 4 dwarvish mithril-coat 4 elven mithril-coat 5 chain mail 5 orcish chain mail 6 scale mail 6 dragon scales 7 studded leather armor 7 ring mail 7 orcish ring mail 8 leather armor 8 leather jacket 9 no armor 10

You can also wear other pieces of armor (for example hel- mets, boots, shields, cloaks) to lower your armor class even fur- ther, but you can only wear one item of each category (one suit of armor, one cloak, one helmet, one shield, and so on) at a time.

If a piece of armor is enchanted, its armor protection will be better (or worse) than normal, and its "plus" (or minus) will subtract from your armor class. For example, a +1 chain mail would give you better protection than normal chain mail, lowering your armor class one unit further to 4. When you put on a piece of armor, you immediately find out the armor class and any "plusses" it provides. Cursed pieces of armor usually have nega- tive enchantments (minuses) in addition to being unremovable.

Many types of armor are subject to some kind of damage like rust. Such damage can be repaired. Some types of armor may in- hibit spell casting.

The commands to use armor are 'W' (wear) and 'T' (take off). The 'A' command can also be used to take off armor as well as other worn items.

7.4. Food ('%')

Food is necessary to survive. If you go too long without eating you will faint, and eventually die of starvation. Some types of food will spoil, and become unhealthy to eat, if not protected. Food stored in ice boxes or tins ("cans") will usual- ly stay fresh, but ice boxes are heavy, and tins take a

while to open.

When you kill monsters, they usually leave corpses which are also "food." Many, but not all, of these are edible; some also give you special powers when you eat them. A good rule of thumb is "you are what you eat."

Some character roles and some monsters are vegetarian. Veg- etarian monsters will typically never eat animal corpses, while vegetarian players can, but with some rather unpleasant side-ef- fects.

You can name one food item after something you like to eat with the fruit option.

The command to eat food is 'e'.

7.5. Scrolls ('?')

Scrolls are labeled with various titles, probably chosen by ancient wizards for their amusement value (for example "READ ME," or "THANX MAUD" backwards). Scrolls disappear after you read them (except for blank ones, without magic spells on them).

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One of the most useful of these is the scroll of identify, which can be used to determine what another object is, whether it is cursed or blessed, and how many uses it has left. Some ob- jects of subtle enchantment are difficult to identify without these.

A mail daemon may run up and deliver mail to you as a scroll of mail (on versions compiled with this feature). To use this feature on versions where NetHack mail delivery is triggered by electronic mail appearing in your system mailbox, you must let NetHack know where to look for new mail by setting the "MAIL" en- vironment variable to the file name of your mailbox. You may al- so want to set the "MAILREADER" environment variable to the file name of your favorite reader, so NetHack can shell to it when you read the scroll. On versions of NetHack where mail is randomly generated internal to the game, these environment variables are ignored. You can disable the mail daemon by turning off the mail option.

The command to read a scroll is 'r'.

7.6. Potions ('!')

Potions are distinguished by the color of the liquid inside the flask. They disappear after you quaff them.

Clear potions are potions of water. Sometimes these are blessed or cursed, resulting in holy or unholy water. Holy water is the bane of the undead, so potions of holy water are good things to throw ('t') at them. It is also sometimes very useful to dip ("#dip") an object into a potion.

The command to drink a potion is 'q' (quaff).

7.7. Wands ('/')

Wands usually have multiple magical charges. Some types of wands require a direction in which to zap them. You can also zap them at yourself (just give a '.' or 's' for the direction). Be warned, however, for this is often unwise. Other types of wands don't require a direction. The number of charges in a wand is random and decreases by one whenever you use it.

When the number of charges left in a wand becomes zero, at- tempts to use the wand will usually result in nothing happening. Occasionally, however, it may be possible to squeeze the last few mana points from an otherwise spent wand, destroying it in the process. A wand may be recharged by using suitable magic, but doing so runs the risk of causing it to explode. The chance for such an explosion starts out very small and increases each time the wand is recharged.

In a truly desperate situation, when your back is up against the wall, you might decide to go for broke and break your wand.

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This is not for the faint of heart. Doing so will almost cer- tainly cause a catastrophic release of magical energies.

When you have fully identified a particular wand, inventory display will include additional information in parentheses: the number of times it has been recharged followed by a colon and then by its current number of charges. A current charge count of -1 is a special case indicating that the wand has been cancelled.

The command to use a wand is 'z' (zap). To break one, use the 'a' (apply) command.

7.8. Rings ('=')

Rings are very useful items, since they are relatively per- manent magic, unlike the usually fleeting effects of potions, scrolls, and wands.

Putting on a ring activates its magic. You can wear only two rings, one on each ring finger.

Most rings also cause you to grow hungry more rapidly, the rate varying with the type of ring.

The commands to use rings are 'P' (put on) and 'R' (remove).

7.9. Spellbooks ('+')

Spellbooks are tomes of mighty magic. When studied with the 'r' (read) command, they transfer to the reader the knowledge of a spell (and therefore eventually become unreadable) – unless the attempt backfires. Reading a cursed spellbook or one with mystic runes beyond your ken can be harmful to your health!

A spell (even when learned) can also backfire when you cast it. If you attempt to cast a spell well above your experience level, or if you have little skill with the appropriate spell type, or cast it at a time when your luck is particularly bad, you can end up wasting both the energy and the time required in casting.

Casting a spell calls forth magical energies and focuses them with your naked mind. Some of the magical energy released comes from within you. Casting temporarily drains your magical power, which will slowly be recovered, and causes you to need ad- ditional food. Casting of spells also requires practice. With practice, your skill in each category of spell casting will improve. Over time, however, your memory of each spell will dim, and you will need to relearn it.

Some spells require a direction in which to cast them, simi- lar to wands. To cast one at yourself, just give a '.' or 's' for the direction. A few spells require you to pick a target lo- cation rather than just specify a particular direction. Other

spells don't require any direction or target.

Just as weapons are divided into groups in which a character can become proficient (to varying degrees), spells are similarly grouped. Successfully casting a spell exercises its skill group; using the "#enhance" command to advance a sufficiently exercised skill will affect all spells within the group. Advanced skill may increase the potency of spells, reduce their risk of failure during casting attempts, and improve the accuracy of the estimate for how much longer they will be retained in your memory. Skill slots are shared with weapons skills. (See also the section on "Weapon proficiency".)

Casting a spell also requires flexible movement, and wearing various types of armor may interfere with that.

The command to read a spellbook is the same as for scrolls, 'r' (read). The '+' command lists each spell you know along with its level, skill category, chance of failure when casting, and an estimate of how strongly it is remembered. The 'Z' (cast) com- mand casts a spell.

7.10. Tools ('(')

Tools are miscellaneous objects with various purposes. Some tools have a limited number of uses, akin to wand charges. For example, lamps burn out after a while. Other tools are contain- ers, which objects can be placed into or taken out of.

The command to use a tool is 'a' (apply).

7.10.1. Containers

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You may encounter bags, boxes, and chests in your travels. A tool of this sort can be opened with the "#loot" extended com- mand when you are standing on top of it (that is, on the same floor spot), or with the 'a' (apply) command when you are carry- ing it. However, chests are often locked, and are in any case unwieldy objects. You must set one down before unlocking it by using a key or lock-picking tool with the 'a' (apply) command, by kicking it with the 'D' command, or by using a weapon to force the lock with the "#force" extended command.

Some chests are trapped, causing nasty things to happen when you un- lock or open them. You can check for and try to deactivate traps with the "#untrap" extended command.

7.11. Amulets ('"')

Amulets are very similar to rings, and often more powerful. Like rings, amulets have various magical properties, some benefi- cial, some harmful, which are activated by putting them on.

Only one amulet may be worn at a time, around your neck.

The commands to use amulets are the same as for rings, 'P' (put on) and 'R' (remove).

7.12. Gems ('*')

Some gems are valuable, and can be sold for a lot of gold. They are also a far more efficient way of carrying your riches. Valuable gems increase your score if you bring them with you when you exit.

Other small rocks are also categorized as gems, but they are much less valuable. All rocks, however, can be used as projec- tile weapons (if you have a sling). In the most desperate of cases, you can still throw them by hand.

7.13. Large rocks ('`')

Statues and boulders are not particularly useful, and are generally heavy. It is rumored that some statues are not what they seem.

Very large humanoids (giants and their ilk) have been known to use boulders as weapons.

For some configurations of the program, statues are no longer shown as '`' but by the letter representing the monster they depict instead.

7.14. Gold ('$')

Gold adds to your score, and you can buy things in shops with it. There are a number of monsters in the dungeon that may be influenced by the amount of gold you are carrying (shopkeepers aside).

7.15. Persistence of Objects

Normally, if you have seen an object at a particular map lo- cation and move to another location where you can't directly see that object any more, if will continue to be displayed on your map. That remains the case even if it is not actually there any more – perhaps a monster has picked it up or it has rotted away – until you can see or feel that location again. One notable exception is that if the object gets covered by the "remembered, unseen monster" marker. When that marker is later removed after you've verified that no monster is there, you will forget that there was any object there regardless of whether the unseen mon- ster actually took the object. If the object is still there, then once you see or feel that location again you will re-discov- er the object and resume remembering it.

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The situation is the same for a pile of objects, except that only the top item of the pile is displayed. The hilite$_{\text{pile}}$ op- tion can be enabled in order to show an item differently when it is the top one of a pile.

1. Conduct

As if winning NetHack were not difficult enough, certain

players seek to challenge themselves by imposing restrictions on the way they play the game. The game automatically tracks some of these challenges, which can be checked at any time with the #conduct command or at the end of the game. When you perform an action which breaks a challenge, it will no longer be listed. This gives players extra "bragging rights" for winning the game with these challenges. Note that it is perfectly acceptable to win the game without resorting to these restrictions and that it is unusual for players to adhere to challenges the first time they win the game.

Several of the challenges are related to eating behavior. The most difficult of these is the foodless challenge. Although creatures can survive long periods of time without food, there is a physiological need for water; thus there is no restriction on drinking beverages, even if they provide some minor food bene- fits. Calling upon your god for help with starvation does not violate any food challenges either.

A strict vegan diet is one which avoids any food derived from animals. The primary source of nutrition is fruits and veg- etables. The corpses and tins of blobs ('b'), jellies ('j'), and fungi ('F') are also considered to be vegetable matter. Certain human food is prepared without animal products; namely, lembas wafers, cram rations, food rations (gunyoki), K-rations, and C- rations. Metal or another normally indigestible material eaten while

polymorphed into a creature that can digest it is also con- sidered vegan food. Note however that eating such items still counts against foodless conduct.

Vegetarians do not eat animals; however, they are less se- lective about eating animal byproducts than vegans. In addition to the vegan items listed above, they may eat any kind of pudding ('P') other than the black puddings, eggs and food made from eggs (fortune cookies and pancakes), food made with milk (cream pies and candy bars), and lumps of royal jelly. Monks are expected to observe a vegetarian diet.

Eating any kind of meat violates the vegetarian, vegan, and foodless conducts. This includes tripe rations, the corpses or tins of any monsters not mentioned above, and the various other chunks of meat found in the dungeon. Swallowing and digesting a monster while polymorphed is treated as if you ate the creature's corpse. Eating leather, dragon hide, or bone items while poly- morphed into a creature that can digest it, or eating monster brains while polymorphed into a mind flayer, is considered eating

an animal, although wax is only an animal byproduct.

Regardless of conduct, there will be some items which are indigestible, and others which are hazardous to eat. Using a swallow-and-digest attack against a monster is equivalent to eat- ing the monster's corpse. Please note that the term "vegan" is used here only in the context of diet. You are still free to choose not to use or wear items derived from animals (e.g. leather, dragon hide, bone, horns, coral), but the game will not keep track of this for you. Also note that "milky" potions may be a translucent white, but they do not contain milk, so they are compatible with a vegan diet. Slime molds or player-defined "fruits", although they could be anything from "cherries" to "pork chops", are also assumed to be vegan.

An atheist is one who rejects religion. This means that you cannot #pray, #offer sacrifices to any god, #turn undead, or #chat with a priest. Partic- ularly selective readers may argue that playing Monk or Priest characters should violate this con- duct; that is a choice left to the player. Offering the Amulet of Yendor to your god is necessary to win the game and is not counted against this conduct. You are also not penalized for be- ing spoken to by an angry god, priest(ess), or other religious figure; a true atheist would hear the words but attach no special meaning to them.

Most players fight with a wielded weapon (or tool intended to be wielded as a weapon). Another challenge is to win the game without using such a wielded weapon. You are still permitted to throw, fire, and kick weapons; use a wand, spell, or other type of item; or fight with your hands and feet.

In NetHack, a pacifist refuses to cause the death of any other monster (i.e. if you would get experience for the death). This is a particularly difficult challenge, although it is still possible to gain experience by other means.

An illiterate character cannot read or write. This includes reading a scroll, spellbook, fortune cookie message, or t-shirt; writing a scroll; or making an engraving of anything other than a single "X" (the traditional signature of an illiterate person). Reading an engraving, or any item that is absolutely necessary to win the game, is not counted against this conduct. The identity of scrolls and spellbooks (and knowledge of spells) in your starting inventory is assumed to be learned from your teachers prior to the start of the game and isn't counted.

There are several other challenges tracked by the game. It is possible to eliminate one or more species of monsters by geno- cide; playing without this feature is considered a challenge. When the game offers you an opportunity to genocide monsters, you may respond with the monster type "none" if you want to decline. You can change the form of an item into another item of the same type ("polypiling") or the form of your own body into another

creature ("polyself") by wand, spell, or potion of polymorph; avoiding these effects are each considered challenges. Polymor- phing monsters, including pets, does not break either of these challenges. Finally, you may sometimes receive wishes; a game without an attempt to wish for any items is a challenge, as is a game without wishing for an artifact (even if the artifact imme- diately disappears). When the game offers you an opportunity to make a wish for an item, you may choose "nothing" if you want to decline.

1. Options

Due to variations in personal tastes and conceptions of how

NetHack should do things, there are options you can set to change how NetHack behaves.

9.1. Setting the options

Options may be set in a number of ways. Within the game, the 'O' command allows you to view all options and change most of them. You can also set options automatically by placing them in a configuration file, or in the NETHACKOPTIONS environment vari- able. Some versions of NetHack also have front-end programs that allow you to set options before starting the game or a global configuration for system administrators.

9.2. Using a configuration file

The default name of the configuration file varies on differ- ent operating systems.

On UNIX, Linux, and Mac OS X it is ".nethackrc" in the us- er's home directory. The file may not exist, but it is a normal ASCII text file and can be created with any text editor.

On Windows, it is ".nethackrc" in the folder "\FILE%\3.6". The file may not exist, but it is a normal ASCII text file can can be created with any text editor. After running NetHack for the first time, you should find a default template for the configuration file named ".nethackrc.template" in "\figuration file, NetHack will create the configuration file for you using the default template file.

On MS-DOS, it is "defaults.nh" in the same folder as nethack.exe.

Any line in the configuration file starting with '#' is treated as a com- ment. Empty lines are ignored.

Any line beginning with '[' and ending in ']' is considered a section marker. The text between the square brackets is the section name. Lines after a section marker belong to that sec- tion, and are ignored unless a CHOOSE statement was used to

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select that section. Section names are case insensitive.

You can use different configuration statements in the file, some of which can be used multiple times. In general, the state- ments are written in capital letters, followed by an equals sign, followed by settings particular to that statement.

Here is a list of allowed statements:

OPTIONS There are two types of options, boolean and compound op- tions. Boolean options toggle a setting on or off, while compound op- tions take more diverse values. Prefix a boolean option with "no" or '!' to turn it off. For compound options, the option name and value are separated by a colon. Some options are per- sistent, and apply only to new games. You can specify multiple OPTIONS statements, and multiple options separated by commas in a single OPTIONS statement. (Comma separated options are pro- cessed from right to left.)

Example:

OPTIONS=dogname:Fido OPTIONS=!legacy,autopickup,pickup$_{types}$:$"=/!?+

HACKDIR Default location of files NetHack needs. On Windows HACK- DIR defaults to the location of the NetHack.exe or NetHackw.exe file so set- ting HACKDIR to override that is not usually neces- sary or recommended.

LEVELDIR The location that in-progress level files are stored. Defaults to HACKDIR, must be writable.

SAVEDIR The location where saved games are kept. Defaults to HACK-DIR, must be writable.

BONESDIR The location that bones files are kept. Defaults to HACK-DIR, must be writable.

LOCKDIR The location that file synchronization locks are stored. Defaults to HACKDIR, must be writable.

TROUBLEDIR The location that a record of game aborts and self-diagnosed game problems is kept. Defaults to HACKDIR, must be writable.

AUTOCOMPLETE Enable or disable an extended command autocompletion. Autocom- pletion has no effect for the X11 windowport. You can specify

multiple autocompletions. To enable autocompletion, list the extended command. Prefix the command with "!" to disable the autocompletion for that command.

Example:

AUTOCOMPLETE=zap,!annotate

$AUTOPICKUP_{EXCEPTION}$ Set exceptions to the $pickup_{types}$ option. See the "Configur- ing Autopickup Exceptions" section.

BINDINGS Change the key bindings of some special keys, menu accelerators, or extended commands. You can specify multiple bindings. Format is key followed by the command, separated by a colon. See the "Changing Key Bindings" section for more information.

Example:

BIND=^{X}:getpos.autodescribe

CHOOSE Chooses at random one of the comma-separated parameters as an active section name. Lines in other sections are ignored.

Example:

OPTIONS=color CHOOSE=char A,char B [char A] OPTIONS=role:arc,race:dwa,align:law,gender:fe [char B] OPTIONS=role:wiz,race:elf,align:cha,gender:mal

MENUCOLOR Highlight menu lines with different colors. See the "Configur-ing Menu Colors" section.

MSGTYPE Change the way messages are shown in the top status line. See the "Configuring Message Types" section.

ROGUESYMBOLS Custom symbols for for the rogue level's symbol set. See SYM- BOLS below.

SOUND Define a sound mapping. See the "Configuring User Sounds" sec- tion.

SOUNDDIR Define the directory that contains the sound files. See the "Configuring User Sounds" section.

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SYMBOLS Override one or more symbols in the symbol set used for all dungeon levels except for the special rogue level. See the "Modifying NetHack Symbols" section.

Example:

SYMBOLS=S$_{\text{boulder}}$:0,S$_{\text{golem}}$:7

WIZKIT Debug mode only: extra items to add to initial inventory. Value is the name of a text file containing a list of item names, one per line, up to a maximum of 128 lines. Each line is processed by the function that handles wishing.

Example:

WIZKIT=~/wizkit.txt

Here is an example of configuration file contents:

OPTIONS=role:Valkyrie, race:Human, gender:female, align:lawful

OPTIONS=autopickup,pickup$_{\text{types}}$:$"=/!?+

OPTIONS=color # Display things in color if possible OPTIONS=lit$_{\text{corridor}}$ # Show lit corridors differently OPTIONS=hilite$_{\text{pet,hilitepile}}$

SYMBOLS=S$_{\text{boulder}}$:0,S$_{\text{golem}}$:7

OPTIONS=!splash$_{\text{screen}}$

9.3. Using the NETHACKOPTIONS environment variable

The NETHACKOPTIONS variable is a comma-separated list of initial values for the various options. Some can only be turned on or off. You turn one of these on by adding the name of the option to the list, and turn it off by typing a '!' or "no" be- fore the name. Others take a character string as a value. You can set string options by typing the option name, a colon or equals sign, and then the value of the string. The value is ter- minated by the next comma or the end of string.

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For example, to set up an environment variable so that color is on, legacy is off, character name is set to "Blue Meanie", and named fruit is set to "lime", you would enter the command

% setenv NETHACKOPTIONS "color,\!leg,name:Blue Meanie,fruit:lime"

in csh (note the need to escape the '!' since it's special to that shell), or the pair of commands

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$ NETHACKOPTIONS="color,!leg,name:Blue Meanie,fruit:lime" $ export NETHACKOPTIONS

in sh, ksh, or bash.

The NETHACKOPTIONS value is effectively the same as a single OPTIONS statement in a configuration file. The "OPTIONS=" prefix is implied and comma separated options are processed from right to left. Other types of configuration statements such as BIND or MSGTYPE are not allowed.

Instead of a comma-separated list of options, NETHACKOPTIONS can be set to the full name of a configuration file you want to use. If that full name doesn't start with a slash, precede it with '@' (at-sign) to let NetHack know that the rest is intended as a file name. If it does start with '/', the at-sign is op- tional.

9.4. Customization options

Here are explanations of what the various options do. Char- acter strings that are too long may be truncated. Some of the options listed may be inactive in your dungeon.

Some options are persistent, and are saved and reloaded along with the game. Changing a persistent option in the config- uration file applies only to new games.

acoustics Enable messages about what your character hears (default on). Note that this has nothing to do with your computer's audio ca- pabilities. Persistent.

align Your starting alignment (align:lawful, align:neutral, or align:chaotic). You may specify just the first letter. The default is to randomly pick an appropriate alignment. If you prefix the value with '!' or "no", you will exclude that align- ment from being picked randomly. Cannot be set with the 'O' command. Persistent.

autodescribe Automatically describe the terrain under cursor when asked to get a location on the map (default true). The whatis$_{coord}$ op- tion controls whether the description includes map coordinates.

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autodig Automatically dig if you are wielding a digging tool and moving into a place that can be dug (default false). Persistent.

autoopen Walking into a door attempts to open it (default true). Persistent.

autopickup Automatically pick up things onto which you move (default on). Persistent. See pickup$_{types}$ to refine the behavior.

autoquiver This option controls what happens when you attempt the 'f' (fire) command when nothing is quivered or readied (default false). When

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true, the computer will fill your quiver or quiver sack or make ready some suitable weapon. Note that it will not take into account the blessed/cursed status, enchant- ment, damage, or quality of the weapon; you are free to manual- ly fill your quiver or quiver sack or make ready with the 'Q' command instead. If no weapon is found or the option is false, the 't' (throw) command is executed instead. Persistent.

blind Start the character permanently blind (default false). Persis- tent.

bones Allow saving and loading bones files (default true). Persis- tent.

boulder Set the character used to display boulders (default is the "large rock" class symbol, "').

catname Name your starting cat (for example "catname:Morris"). Can- not be set with the 'O' command.

character Synonym for "role" to pick the type of your character (for ex- ample "character:Monk"). See role for more details.

checkpoint Save game state after each level change, for possible recovery after program crash (default on). Persistent.

checkspace Check free disk space before writing files to disk (default on). You may have to turn this off if you have more than 2 GB free space on the partition used for your save and level files (because too much space might overflow the calculation and end up looking like insufficient space). Only applies when MFLOPPY was defined during compilation.

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clicklook Allows looking at things on the screen by navigating the mouse over them and clicking the right mouse button (default off).

cmdassist Have the game provide some additional command assistance for new players if it detects some anticipated mistakes (default on).

confirm Have user confirm attacks on pets, shopkeepers, and other peace- able creatures (default on). Persistent.

dark$_{room}$ Show out-of-sight areas of lit rooms (default on). Persistent.

disclose Controls what information the program reveals when the game ends. Value is a space separated list of prompting/category pairs (default is "ni na nv ng nc no", prompt with default re- sponse of 'n' for each candidate). Persistent. The possibili- ties are:

i - disclose your inventory; a - disclose your attributes; v - summarize monsters that have been vanquished; g - list monster species that have been genocided; c - display your conduct; o - display dungeon overview.

Each disclosure possibility can optionally be preceded by a prefix which lets you refine how it behaves. Here are the valid prefixes:

y - prompt you and default to yes on the prompt; n - prompt you and default to no on the prompt;

- • - disclose it without prompting;

- • - do not disclose it and do not prompt.

The listing of vanquished monsters can be sorted, so there are two additional choices for 'v':

? - prompt you and default to ask on the prompt;

Asking refers to picking one of the orderings from a menu. The '+' disclose without prompting choice, or being prompted and answering 'y' rather than 'a', will default to showing monsters in the traditional order, from high level to low level.

Omitted categories are implicitly added with 'n' prefix. Spec- ified categories with omitted prefix implicitly use '+' prefix. Order of the disclosure categories does not matter, program display for end-of-game disclosure follows a set sequence.

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(for example "disclose:yi na +v -g o") The example sets inven- tory to prompt and default to yes, attributes to prompt and de- fault to no, vanquished to disclose without prompting, genocid- ed to not disclose and not prompt, conduct to implicitly prompt and default to no, and overview to disclose without prompting.

Note that the vanquished monsters list includes all monsters killed by traps and each other as well as by you. And the dun- geon overview shows all levels you had visited but does not re- veal things about them that you hadn't discovered.

dogname Name your starting dog (for example "dogname:Fang"). Can- not be set with the 'O' command.

extmenu Changes the extended commands interface to pop-up a menu of available commands. It is keystroke compatible with the tradi- tional interface except that it does not require that you hit Enter. It is implemented for the tty interface (default off).

For the X11 interface, which always uses a menu for choosing an extended command, it controls whether the menu shows all avail- able commands (on) or just the subset of commands which have traditionally been considered extended ones (off).

female An obsolete synonym for "gender:female". Cannot be set with the 'O' command.

fixinv An object's inventory letter sticks to it when it's dropped (default on). If this is off, dropping an object shifts all the remaining inventory letters. Persistent.

force$_{invmenu}$ Commands asking for an inventory item show a menu instead of a text query with possible menu letters. Default is off.

fruit Name a fruit after something you enjoy eating (for example "fruit:mango") (default "slime mold"). Basically a nostalgic whimsy that NetHack uses from time to time. You should set this to something you find more appetizing than slime mold. Apples, oranges, pears, bananas, and melons already exist in NetHack, so don't use those.

gender Your starting gender (gender:male or gender:female). You may specify just the first letter. Although you can still denote your gender using the "male" and "female" options, the "gender" option will take precedence. The default is to randomly pick an appropriate gender. If you prefix the value with '!' or "no", you will exclude that gender from being picked randomly.

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Cannot be set with the 'O' command. Persistent.

goldX When filtering objects based on bless/curse state (BUCX), whether to treat gold pieces as X (unknown bless/curse state, when "on") or U (known to be uncursed, when "off", the de- fault). Gold is never blessed or cursed, but it is not de- scribed as "uncursed" even when the implicit$_{uncursed}$ option is "off".

help If more information is available for an object looked at with the '/' command, ask if you want to see it (default on). Turn- ing help off makes just looking at things faster, since you aren't interrupted with the "More info?" prompt, but it also means that you might miss some interesting and/or important in- formation. Persistent.

herecmd$_{menu}$ When using a windowport that supports mouse and clicking on yourself or next to you, show a menu of possible actions for the location. Same as "#herecmdmenu" and "#therecmdmenu" com- mands.

hilite$_{pet}$ Visually distinguish pets from similar animals (default off). The behavior of this option depends on the type of windowing you use. In text windowing, text highlighting or inverse video is often used; with tiles, gen- erally displays a heart symbol near pets.

With the curses interface, the petattr option controls how to highlight pets and setting it will turn the hilite$_{pet}$ option on or off as warranted.

hilite$_{pile}$ Visually distinguish piles of objects from individual objects (de- fault off). The behavior of this option depends on the type of windowing you use. In text windowing, text highlighting or inverse video is often used;

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with tiles, generally displays a small plus-symbol beside the object on the top of the pile.

hitpointbar Show a hit point bar graph behind your name and title. Only available for TTY and Windows GUI, and only when statushilites is on.

horsename Name your starting horse (for example "horsename:Trigger"). Cannot be set with the 'O' command.

ignintr Ignore interrupt signals, including breaks (default off). Per- sistent.

implicit$_{\text{uncursed}}$ Omit "uncursed" from inventory lists, if possible (default on).

legacy Display an introductory message when starting the game (default on). Persistent.

lit$_{\text{corridor}}$ Show corridor squares seen by night vision or a light source held by your character as lit (default off). Persistent.

lootabc When using a menu to interact with a container, use the old 'a', 'b', and 'c' keyboard shortcuts rather than the mnemonics 'o', 'i', and 'b' (default off). Persistent.

mail Enable mail delivery during the game (default on). Persistent.

male An obsolete synonym for "gender:male". Cannot be set with the 'O' command.

mention$_{\text{walls}}$ Give feedback when walking against a wall (default off).

menucolors Enable coloring menu lines (default off). See "Configuring Menu Colors" on how to configure the colors.

menustyle Controls the interface used when you need to choose various ob- jects (in response to the Drop command, for instance). The value speci- fied should be the first letter of one of the fol- lowing: traditional, combina- tion, full, or partial. Tradi- tional was the only interface available for early versions; it consists of a prompt for object class characters, followed by an object-by-object prompt for all items matching the selected object class(es). Combination starts with a prompt for object class(es) of interest, but then displays a menu of matching ob- jects rather than prompting one-by-one. Full displays a menu of object classes rather than a character prompt, and then a menu of matching objects for selection. Partial skips the ob- ject class filtering and immediately displays a menu of all ob- jects. Persistent.

menu$_{\text{deselect all}}$ Menu character accelerator to deselect all items in a menu. Implemented by the Amiga, Gem, X11 and tty ports. Default '-'.

menu$_{\text{deselect page}}$ Menu character accelerator to deselect all items on this page of a menu. Implemented by the Amiga, Gem and tty ports. De- fault

'\'.

menu$_{\text{first page}}$ Menu character accelerator to jump to the first page in a menu. Implemented by the Amiga, Gem and tty ports. Default '^'.

menu$_{\text{headings}}$ Controls how the headings in a menu are highlighted. Values are "none", "bold", "dim", "underline", "blink", or "inverse". Not all ports can actually display all types.

menu$_{\text{invert all}}$ Menu character accelerator to invert all items in a menu. Im- plemented by the Amiga, Gem, X11 and tty ports. Default '@'.

menu$_{\text{invert page}}$ Menu character accelerator to invert all items on this page of a menu. Implemented by the Amiga, Gem and tty ports. Default '~'.

menu$_{\text{last page}}$ Menu character accelerator to jump to the last page in a menu. Implemented by the Amiga, Gem and tty ports. Default '|'.

menu$_{\text{next page}}$ Menu character accelerator to goto the next menu page. Imple- mented by the Amiga, Gem and tty ports. Default '>'.

menu$_{\text{objsyms}}$ Show object symbols in menu headings in menus where the object symbols act as menu accelerators (default off).

menu$_{\text{overlay}}$ Do not clear the screen before drawing menus, and align menus to the right edge of the screen. Only for the tty port. (de- fault on)

menu$_{\text{previous page}}$ Menu character accelerator to goto the previous menu page. Im- plemented by the Amiga, Gem and tty ports. Default '<'.

menu$_{\text{search}}$ Menu character accelerator to search for a menu item. Imple- mented by the Amiga, Gem, X11 and tty ports. Default ':'.

menu$_{\text{select all}}$ Menu character accelerator to select all items in a menu. Im- plemented by the Amiga, Gem, X11 and tty ports. Default '.'.

menu$_{\text{select page}}$ Menu character accelerator to select all items on this page of a menu. Implemented by the Amiga, Gem and tty ports. Default ','.

monpolycontrol Prompt for new form whenever any monster changes shape (default

off). Debug mode only.

mouse$_{\text{support}}$ Allow use of the mouse for input and travel. Valid settings are:

0 - disabled 1 - enabled and make OS adjustments to support mouse use 2 - like 1 but does not make any OS adjustments

Omitting a value is the same as specifying 1 and negating mouse$_{\text{support}}$ is the same as specifying 0.

msghistory The number of top line messages to keep (and be able to recall with '^P') (default 20). Cannot be set with the 'O' command.

msg_window Allows you to change the way recalled messages are displayed. Currently it is only supported for tty (all four choices) and for curses ('f' and 'r' choices, default 'r'). The possible values are:

s - single message (default; only choice prior to 3.4.0); c - combination, two messages as "single", then as "full"; f - full window, oldest message first; r - full window reversed, newest message first.

For backward compatibility, no value needs to be specified (which defaults to "full"), or it can be negated (which defaults to "single").

name Set your character's name (defaults to your user name). You can also set your character's role by appending a dash and one or more letters of the role (that is, by suffixing one of -A -B -C -H -K -M -P -Ra -Ro -S -T -V -W). If -@ is used for the role, then a random one will be automatically chosen. Cannot be set with the 'O' command.

news Read the NetHack news file, if present (default on). Since the news is shown at the beginning of the game, there's no point in setting this with the 'O' command.

nudist Start the character with no armor (default false). Persistent.

null Send padding nulls to the terminal (default on). Persistent.

number_pad Use digit keys instead of letters to move (default 0 or off). Valid settings are:

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0 - move by letters; "yuhjklbn" 1 - move by numbers; digit '5' acts as 'G' movement prefix 2 - like 1 but '5' works as 'g' prefix instead of as 'G' 3 - by numbers using phone key layout; 123 above, 789 below 4 - combines 3 with 2; phone layout plus MS-DOS compatibility -1 - by letters but use 'z' to go northwest, 'y' to zap wands

For backward compatibility, omitting a value is the same as specifying 1 and negating number_pad is the same as specifying

1. (Settings 2 and 4 are for compatibility with MS-DOS or old

PC Hack; in addition to the different behavior for '5', 'Alt-5' acts as 'G' and 'Alt-0' acts as 'I'. Setting -1 is to accommo- date some QWERTZ keyboards which have the location of the 'y' and 'z' keys swapped.) When moving by numbers, to enter a count prefix for those commands which accept one (such as "12s" to search twelve times), precede it with the letter 'n' ("n12s").

packorder Specify the order to list object types in (default "")[%?+!=/(*'0_"). The value of this option should be a string containing the symbols for the

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various object types. Any omit- ted types are filled in at the end from the previous order.

paranoid$_{\text{confirmation}}$ A space separated list of specific situations where alternate prompting is desired. The default is paranoid$_{\text{confirma}}$- tion:pray.

Confirm - for any prompts which are set to require "yes" rather than 'y', also require "no" to reject in- stead of accepting any non-yes response as no quit - require "yes" rather than 'y' to confirm quitting the game or switching into non-scoring explore mode; die - require "yes" rather than 'y' to confirm dying (not useful in normal play; applies to explore mode); bones - require "yes" rather than 'y' to confirm saving bones data when dying in debug mode; attack - require "yes" rather than 'y' to confirm attack- ing a peaceful monster; wand-break - require "yes" rather than 'y' to confirm breaking a wand; eating - require "yes" rather than 'y' to confirm whether to continue eating; Were-change - require "yes" rather than 'y' to confirm changing form due to lycanthropy when hero has polymorph control; pray - require 'y' to confirm an attempt to pray rather than immediately praying; on by default; Remove - require selection from inventory for 'R' and 'T' commands even when wearing just one applicable item.

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all - turn on all of the above.

By default, the pray choice is enabled, the others disabled. To disable it without setting any of the other choices, use "paranoid$_{\text{confirmation}}$:none". To keep it enabled while setting any of the others, include it in the list, such as "para- noid$_{\text{confirmation}}$:attack pray Remove".

perm$_{\text{invent}}$ If true, always display your current inventory in a window. This only makes sense for windowing system interfaces that im- plement this feature.

petattr Specifies one or more text highlighting attributes to use when showing pets on the map. Effectively a superset of the hilite$_{\text{pet}}$ boolean option. Curses interface only; value is one or more of the following letters.

n - Normal text (no highlighting) i - Inverse video (default) b - Bold text u - Underlined text k - blinKing text d - Dim text t - iTalic text l - Left line indicator r - Right line indicator

Some of those choices might not work, particularly the final three, de- pending upon terminal hardware or terminal emulation software.

Currently multiple highlight-style letters can be combined by simply stringing them together (for example, "bk"), but in the future they might require being separated by plus signs (such as "b+k", which works already).

When using the 'n' choice, it should be specified on its own, not in combination with any of the other letters.

pettype Specify the type of your initial pet, if you are playing a character class that uses multiple types of pets; or choose to have no initial pet at all. Possible values are "cat", "dog", "horse", and "none". If the choice is not allowed for the role you are currently playing, it will be silently ignored. For example, "horse" will only be honored when playing a knight. Cannot be set with the 'O' command.

pickup$_{burden}$ When you pick up an item that would exceed this encumbrance level (Unencumbered, Burdened, streSsed, straiNed, overTaxed, or overLoaded), you will be asked if you want to continue. (Default 'S'). Persistent.

pickup$_{thrown}$ If this option is on and autopickup is also on, try to pick up things that you threw, even if they aren't in pickup$_{types}$ or match an autopickup exception. Default is on. Persistent.

pickup$_{types}$ Specify the object types to be picked up when autopickup is on. Default is all types. You can use autopickup$_{exception}$ config- uration file lines to further refine autopickup behavior. Per- sistent.

pile$_{limit}$ When walking across a pile of objects on the floor, threshold at which the message "there are few/several/many objects here" is given instead of showing a popup list of those objects. A value of 0 means "no limit" (always list the objects); a value of 1 effectively means "never show the objects" since the pile size will always be at least that big; default value is 5. Persistent.

playmode Values are "normal", "explore", or "debug". Allows selection of explore mode (also known as discovery mode) or debug mode (also known as wizard mode) instead of normal play. Debug mode might only be allowed for someone logged in under a particular user name (on multi-user systems) or specifying a particular character name (on single-user systems) or it might be disabled entirely. Requesting it when not allowed or not possible re- sults in explore mode instead. Default is normal play.

pushweapon Using the 'w' (wield) command when already wielding something pushes the old item into your alternate weapon slot (default off). Likewise for the 'a' (apply) command if it causes the applied item to become wielded. Persistent.

race Selects your race (for example, "race:human"). Default is ran- dom. If you prefix the value with '!' or "no", you will ex- clude that race from being picked randomly. Cannot be set with the 'O' command. Persistent.

rest$_{onspace}$ Make the space bar a synonym for the '.' (#wait) command (de- fault off). Persistent.

role Pick your type of character (for example "role:Samurai"); syn- onym for "character". See "name" for an alternate method of specifying your role. Normally only the first letter of the value is examined; 'r' is an exception with "Rogue", "Ranger", and "random" values. If you prefix the value with '!' or "no", you will exclude that role from being picked randomly. Cannot be set with the 'O' command. Persistent.

roguesymset This option may be used to select one of the named symbol sets found within "symbols" to alter the symbols displayed on the screen on the rogue level.

rlecomp When writing out a save file, perform run length compression of the map. Not all ports support run length compression. It has no effect on reading an existing save file.

runmode Controls the amount of screen updating for the map window when engaged in multi-turn movement (running via shift+direction or con- trol+direction and so forth, or via the travel command or mouse click). The possible values are:

teleport - update the map after movement has finished; run - update the map after every seven or so steps; walk - update the map after each step; crawl - like walk, but pause briefly after each step.

This option only affects the game's screen display, not the ac- tual results of moving. The default is "run"; versions prior to 3.4.1 used "teleport" only. Whether or not the effect is noticeable will depend upon the window port used or on the type of terminal. Persistent.

safe$_{pet}$ Prevent you from (knowingly) attacking your pets (default on). Persistent.

sanity$_{check}$ Evaluate monsters, objects, and map prior to each turn (de- fault off). Debug mode only.

scores Control what parts of the score list you are shown at the end (for example "scores:5 top scores/4 around my score/own scores"). Only the first letter of each category ('t', 'a', or 'o') is necessary. Persistent.

showexp Show your accumulated experience points on bottom line (de- fault off). Persistent.

showrace Display yourself as the glyph for your race, rather than the glyph for your role (default off). Note that this setting af- fects only the appearance of the display, not the way the game treats you. Persistent.

showscore Show your approximate accumulated score on bottom line (default off). Persistent.

silent Suppress terminal beeps (default on). Persistent.

sortloot Controls the sorting behavior of the pickup lists for inventory and #loot commands and some others. Persistent. The possible values are:

full - always sort the lists; loot - only sort the lists that don't use inventory letters, like with the #loot and pickup commands; none - show lists the traditional way without sorting.

sortpack Sort the pack contents by type when displaying inventory (default on). Persistent.

sparkle Display a sparkly effect when a monster (including yourself) is hit by an attack to which it is resistant (default on). Per- sistent.

standout Boldface monsters and "–More–" (default off). Persistent.

statushilites Controls how many turns status hilite behaviors highlight the field. If negated or set to zero, disables status hiliting. See "Configuring Status Hilites" for further information.

$status_{updates}$ Allow updates to the status lines at the bottom of the screen (default true).

$suppress_{alert}$ This option may be set to a NetHack version level to suppress alert notification messages about feature changes for that and prior versions (for example "$suppress_{alert}$:3.3.1").

symset This option may be used to select one of the named symbol sets found within "symbols" to alter the symbols displayed on the screen. Use "symset:default" to explicitly select the default symbols.

time Show the elapsed game time in turns on bottom line (default off). Persistent.

$timed_{delay}$ When pausing momentarily for display effect, such as with explosions and moving objects, use a timer rather than sending extra characters to the screen. (Applies to "tty" interface only; "X11" interface always uses a timer based delay. The

default is on if configured into the program.) Persistent.

tombstone Draw a tombstone graphic upon your death (default on). Persis- tent.

toptenwin Put the ending display in a NetHack window instead of on stdout (default off). Setting this option makes the score list visi- ble when a windowing version of NetHack is started without a parent window, but it no

longer leaves the score list around after game end on a terminal or emulating window.

travel Allow the travel command (default on). Turning this option off will prevent the game from attempting unintended moves if you make inadvertent mouse clicks on the map window. Persistent.

verbose Provide more commentary during the game (default on). Persistent.

whatis$_{coord}$ When using the '/' or ';' commands to look around on the map with autodescribe on, display coordinates after the descrip- tion. Also works in other situations where you are asked to pick a location.

The possible settings are:

c - compass ("east" or "3s" or "2n,4w"); f - full compass ("east" or "3south" or "2north,4west"); m - map $<$x,y$>$ (map column x=0 is not used); s - screen [row,column] (row is offset to match tty usage); n - none (no coordinates shown) [default].

The whatis$_{coord}$ option is also used with the "*m*", "*/M*", "*/o*", *and* "*/O*" *sub-commands of* '', where the "none" setting is over- ridden with "map".

whatis$_{filter}$ When getting a location on the map, and using the keys to cycle through next and previous targets, allows filtering the possi- ble targets.

n - no filtering [default] v - in view only a - in same area only

The area-filter tries to be slightly predictive – if you're standing on a doorway, it will consider the area on the side of the door you were last moving towards.

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Filtering can also be changed when getting a location with the "get-pos.filter" key.

whatis$_{menu}$ When getting a location on the map, and using a key to cycle through next and previous targets, use a menu instead to pick a target. (default off)

whatis$_{moveskip}$ When getting a location on the map, and using shifted movement keys or meta-digit keys to fast-move, instead of moving 8 units at a time, move by skipping the same glyphs. (default off)

windowtype When the program has been built to support multiple inter- faces, select which one to use, such as "tty" or "X11" (default de- pends on build-time settings; use "#version" to check). Cannot be set with the 'O' command.

When used, it should be the first option set since its value might en- able or disable the availability of various other op- tions. For multiple lines in a configuration file, that would be the first non-comment line. For a

comma-separated list in NETHACKOPTIONS or an OPTIONS line in a configuration file, that would be the rightmost option in the list.

wizweight Augment object descriptions with their objects' weight (default off). Debug mode only.

zerocomp When writing out a save file, perform zero-comp compression of the contents. Not all ports support zero-comp compression. It has no effect on reading an existing save file.

9.5. Window Port Customization options

Here are explanations of the various options that are used to customize and change the characteristics of the windowtype that you have chosen. Character strings that are too long may be truncated. Not all window ports will adjust for all settings listed here. You can safely add any of these options to your configuration file, and if the window port is capable of adjust- ing to suit your preferences, it will attempt to do so. If it can't it will silently ignore it. You can find out if an option is supported by the window port that you are currently using by checking to see if it shows up in the Options list. Some options are dynamic and can be specified during the game with the 'O' command.

$align_{message}$ Where to align or place the message window (top, bottom, left, or right)

$align_{status}$ Where to align or place the status window (top, bottom, left, or right).

$ascii_{map}$ If NetHack can, it should display an ascii character map if it can.

color If NetHack can, it should display color if it can for different monsters, objects, and dungeon features.

$eight_{bittty}$ If NetHack can, it should pass eight-bit character values (for example, specified with the traps option) straight through to your terminal (default off).

$font_{map}$ if NetHack can, it should use a font by the chosen name for the map window.

$font_{menu}$ If NetHack can, it should use a font by the chosen name for menu windows.

$font_{message}$ If NetHack can, it should use a font by the chosen name for the message window.

$font_{status}$ If NetHack can, it should use a font by the chosen name for the status window.

font_text If NetHack can, it should use a font by the chosen name for text windows.

$\text{font}_\text{sizemap}$ If NetHack can, it should use this size font for the map window.

$\text{font}_\text{sizemenu}$ If NetHack can, it should use this size font for menu windows.

$\text{font}_\text{sizemessage}$ If NetHack can, it should use this size font for the message window.

$\text{font}_\text{sizestatus}$ If NetHack can, it should use this size font for the status window.

$\text{font}_\text{sizetext}$ If NetHack can, it should use this size font for text windows.

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fullscreen If NetHack can, it should try and display on the entire screen rather than in a window.

guicolor Use color text and/or highlighting attributes when displaying some non-map data (such as menu selector letters). Curses in- terface only; default is on.

large_font If NetHack can, it should use a large font.

map_mode If NetHack can, it should display the map in the manner specified.

$\text{player}_\text{selection}$ If NetHack can, it should pop up dialog boxes, or use prompts for character selection.

$\text{popup}_\text{dialog}$ If NetHack can, it should pop up dialog boxes for input.

$\text{preload}_\text{tiles}$ If NetHack can, it should preload tiles into memory. For exam- ple, in the protected mode MS-DOS version, control whether tiles get pre-loaded into RAM at the start of the game. Doing so enhances performance of the tile graphics, but uses more memory. (default on). Cannot be set with the 'O' command.

$\text{scroll}_\text{amount}$ If NetHack can, it should scroll the display by this number of cells when the hero reaches the $\text{scroll}_\text{margin}$.

$\text{scroll}_\text{margin}$ If NetHack can, it should scroll the display when the hero or cursor is this number of cells away from the edge of the win- dow.

selectsaved If NetHack can, it should display a menu of existing saved games for the player to choose from at game startup, if it can. Not all ports support this option.

softkeyboard Display an onscreen keyboard. Handhelds are most likely to support this option.

$\text{splash}_\text{screen}$ If NetHack can, it should display an opening splash screen when it starts up (default yes).

statuslines Number of lines for traditional below-the-map status display.

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Acceptable values are 2 and 3 (default is 2). Curses and tty interfaces only.

$term_{cols}$ and

$term_{rows}$ Curses interface only. Number of columns and rows to use for the display. Curses will attempt to resize to the values spec- ified but will settle for smaller sizes if they are too big. Default is the current window size.

$tiled_{map}$ If NetHack can, it should display a tiled map if it can.

$tile_{file}$ Specify the name of an alternative tile file to override the default.

$tile_{height}$ Specify the preferred height of each tile in a tile capable port.

$tile_{width}$ Specify the preferred width of each tile in a tile capable port

$use_{darkgray}$ Use bold black instead of blue for black glyphs (TTY only).

$use_{inverse}$ If NetHack can, it should display inverse when the game speci- fies it.

$vary_{msgcount}$ If NetHack can, it should display this number of messages at a time in the message window.

windowborders Whether to draw boxes around the map, status area, message area, and persistent inventory window if enabled. Curses in- terface only. Acceptable values are

0 - off, never show borders 1 - on, always show borders 2 - auto, on if display is at least $(24+2)x(80+2)$ (default)

(The 26x82 size threshold for '2' refers to number of rows and columns of the display. A width of at least 110 columns $(80+2+26+2)$ is needed for $align_{status}$ set to left or right.)

windowcolors If NetHack can, it should display windows with the speci- fied foreground/background colors. Windows GUI only. The format is

OPTION=windowcolors:wintype foreground/background

where wintype is one of "menu", "message", "status", or "text", and foreground and background are colors, either a hexa- decimal \'#rrggbb', one of the named colors (black, red, green, brown, blue, magenta, cyan, orange, brightgreen, yellow, bright- blue, brightmagenta, brightcyan, white, trueblack, gray, purple, silver, maroon, fuchsia, lime, olive, navy, teal, aqua), or one of Windows UI colors (activeborder, activecaption, appworkspace, background, btnface, btnshadow, btntext, captiontext, graytext, greytext, highlight, highlighttext, inactiveborder, inactivecap- tion, menu, menutext, scrollbar, window, windowframe, window- text).

wraptext If NetHack can, it should wrap long lines of text if they don't fit in the visible area of the window.

9.6. Platform-specific Customization options

Here are explanations of options that are used by specific platforms or ports to customize and change the port behavior.

altkeyhandler Select an alternate keystroke handler dll to load (Win32 tty NetHack only). The name of the handler is specified without the .dll extension and without any path information. Cannot be set with the 'O' command.

altmeta On Amiga, this option controls whether typing "Alt" plus another key functions as a meta-shift for that key (default on).

altmeta On other (non-Amiga) systems where this option is available, it can be set to tell NetHack to convert a two character sequence beginning with ESC into a meta-shifted version of the second character (default off).

This conversion is only done for commands, not for other input prompts. Note that typing one or more digits as a count prefix prior to a command – preceded by n if the number$_{pad}$ option is set – is also subject to this conversion, so attempting to abort the count by typing ESC will leave NetHack waiting for another character to complete the two character sequence. Type a second ESC to finish cancelling such a count. At other prompts a single ESC suffices.

BIOS Use BIOS calls to update the screen display quickly and to read the keyboard (allowing the use of arrow keys to move) on ma- chines with an IBM PC compatible BIOS ROM (default off, OS/2, PC, and ST NetHack only).

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flush (default off, Amiga NetHack only).

MACgraphics (default on, Mac NetHack only).

page$_{wait}$ (default on, Mac NetHack only).

rawio Force raw (non-cbreak) mode for faster output and more bullet-proof input (MS-DOS sometimes treats '^{P}' as a printer toggle without it) (default off, OS/2, PC, and ST NetHack only). Note: DEC Rainbows hang if this is turned on. Cannot be set with the 'O' command.

soundcard (default on, PC NetHack only). Cannot be set with the 'O' com- mand.

subkeyvalue (Win32 tty NetHack only). May be used to alter the value of keystrokes that the operating system returns to NetHack to help compensate for international keyboard issues. OPTIONS=subkey- value:171/92 will return 92 to NetHack, if 171 was originally going to be returned. You

can use multiple subkeyvalue state- ments in the configuration file if needed. Cannot be set with the 'O' command.

video Set the video mode used (PC NetHack only). Values are "autodetect", "default", or "vga". Setting "vga" (or "autodetect" with vga hardware present) will cause the game to display tiles. Cannot be set with the 'O' command.

videocolors Set the color palette for PC systems using NO_{TERMS} (default 4-2-6-1-5-3-15-12-10-14-9-13-11, (PC NetHack only). The order of colors is red, green, brown, blue, magenta, cyan, bright.white, bright.red, bright.green, yellow, bright.blue, bright.magenta, and bright.cyan. Cannot be set with the 'O' command.

videoshades Set the intensity level of the three gray scales available (default dark normal light, PC NetHack only). If the game display is difficult to read, try adjusting these scales; if this does not correct the problem, try !color. Cannot be set with the 'O' command.

9.7. Regular Expressions

Regular expressions are normally POSIX extended regular ex- pressions. It is possible to compile NetHack without regular

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expression support on a platform where there is no regular ex- pression library. While this is not true of any modern platform, if your NetHack was built this way, patterns are instead glob patterns. This applies to Autopickup exceptions, Message types, Menu colors, and User sounds.

9.8. Configuring Autopickup Exceptions

You can further refine the behavior of the autopickup option beyond what is available through the $pickup_{types}$ option.

By placing $autopickup_{exception}$ lines in your configuration file, you can define patterns to be checked when the game is about to autopickup something.

$autopickup_{exception}$ Sets an exception to the $pickup_{types}$ option. The autopick- $up_{exception}$ option should be followed by a regular expression to be used as a pattern to match against the singular form of the description of an object at your location.

In addition, some characters are treated specially if they oc- cur as the first character in the pattern, specifically:

$<$ - always pickup an object that matches rest of pattern; $>$ - never pickup an object that matches rest of pattern.

The $autopickup_{exception}$ rules are processed in the order in which they appear in your configuration file, thus allowing a later rule to override an

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earlier rule.

Exceptions can be set with the 'O' command, but because they are not included in your configuration file, they won't be in effect if you save and then restore your game. autopickup$_{ex}$- ception rules and not saved with the game.

Here are some examples:

autopickup$_{exception}$="<*arrow" autopickup$_{exception}$=">*corpse" autopickup$_{exception}$=">* cursed*"

The first example above will result in autopickup of any type of arrow. The second example results in the exclusion of any corpse from autopickup. The last example results in the ex- clusion of items known to be cursed from autopickup.

9.9. Changing Key Bindings

It is possible to change the default key bindings of some special com- mands, menu accelerator keys, and extended commands, by using BIND stanzas in the configuration file. Format is key, followed by the command to bind to, separated by a colon. The key can be a single character ("x"), a control key ("^{X}", "C-x"),

a meta key ("M-x"), or a three-digit decimal ASCII code.

For example:

BIND=^{X}:getpos.autodescribe BIND={:menu$_{first page}$ BIND=v:loot

Extended command keys You can bind multiple keys to the same ex- tended command. Un- bind a key by using "nothing" as the extended command to bind to. You can also bind the "<esc>", "<enter>", and "<space>" keys.

Menu accelerator keys The menu control or accelerator keys can also be rebound via OPTIONS lines in the configuration file. You cannot bind ob- ject symbols into menu accelerators.

Special command keys Below are the special commands you can rebind. Some of them can be bound to same keys with no problems, others are in the same "context", and if bound to same keys, only one of those commands will be available. Special command can only be bound to a single key.

count Prefix key to start a count, to repeat a command this many times. With number$_{pad}$ only. Default is 'n'.

doinv Show inventory. With number$_{pad}$ only. Default is '0'.

fight Prefix key to force fight a direction. Default is 'F'.

fight.numpad Prefix key to force fight a direction. With number$_{pad}$ only. Default is '-'.

getdir.help When asked for a direction, the key to show the help. Default is '?'.

getdir.self When asked for a direction, the key to target yourself. Default is '.'.

getdir.self2 When asked for a direction, the key to target yourself. Default is 's'.

getpos.autodescribe When asked for a location, the key to toggle autodescribe.

Default is '#'.

getpos.all.next When asked for a location, the key to go to next closest inter- esting thing. Default is 'a'.

getpos.all.prev When asked for a location, the key to go to previous closest interesting thing. Default is 'A'.

getpos.door.next When asked for a location, the key to go to next closest door or doorway. Default is 'd'.

getpos.door.prev When asked for a location, the key to go to previous closest door or doorway. Default is 'D'.

getpos.help When asked for a location, the key to show help. Default is '?'.

getpos.mon.next When asked for a location, the key to go to next closest mon- ster. Default is 'm'.

getpos.mon.prev When asked for a location, the key to go to previous closest monster. Default is 'M'.

getpos.obj.next When asked for a location, the key to go to next closest ob- ject. Default is 'o'.

getpos.obj.prev When asked for a location, the key to go to previous closest object. Default is 'O'.

getpos.menu When asked for a location, and using one of the next or previ- ous keys to cycle through targets, toggle showing a menu in- stead. Default is '!'.

getpos.moveskip When asked for a location, and using the shifted movement keys or meta-digit keys to fast-move around, move by skipping the same glyphs instead of by 8 units. Default is '*'.

getpos.filter When asked for a location, change the filtering mode when using one of the next or previous keys to cycle through targets. Toggles between no filtering, in view only, and in the same area only. Default is '"'.

getpos.pick When asked for a location, the key to choose the location, and possibly ask for more info. Default is '.'.

getpos.pick.once When asked for a location, the key to choose the location, and skip asking for more info. Default is ','.

getpos.pick.quick When asked for a location, the key to choose the location, skip asking for more info, and exit the location asking loop. De- fault is ';'.

getpos.pick.verbose When asked for a location, the key to choose the location, and show more info without asking. Default is ':'.

getpos.self When asked for a location, the key to go to your location. De- fault is '@'.

getpos.unexplored.next When asked for a location, the key to go to next closest unex- plored location. Default is 'x'.

getpos.unexplored.prev When asked for a location, the key to go to pre- vious closest unexplored location. Default is 'X'.

getpos.valid When asked for a location, the key to go to show valid target locations. Default is '$'.

getpos.valid.next When asked for a location, the key to go to next closest valid location. Default is 'z'.

getpos.valid.prev When asked for a location, the key to go to previous closest valid location. Default is 'Z'.

nopickup Prefix key to move without picking up items. Default is 'm'.

redraw Key to redraw the screen. Default is '^{R}'.

redraw.numpad Key to redraw the screen. With number$_{pad}$ only. Default is '^{L}'.

repeat Key to repeat previous command. Default is '^{A}'.

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reqmenu Prefix key to request menu from some commands. Default is 'm'.

run Prefix key to run towards a direction. Default is 'G'.

run.nopickup Prefix key to run towards a direction without picking up items on the way. Default is 'M'.

run.numpad Prefix key to run towards a direction. With number$_{pad}$ only. Default is '5'.

rush Prefix key to rush towards a direction. Default is 'g'.

9.10. Configuring Message Types

You can change the way the messages are shown in the message area, when the message matches a user-defined pattern.

In general, the configuration file entries to describe the message types look like this: MSGTYPE=type "pattern"

type - how the message should be shown; pattern - the pattern to match. The pattern should be a regular expression.

Allowed types are:

show - show message normally; hide - never show the message; stop - wait for user with more-prompt; norep - show the message once, but not again if no other mes- sage is shown in between.

Here's an example of message types using NetHack's internal pattern matching facility:

MSGTYPE=stop "You feel hungry." MSGTYPE=hide "You displaced *."

specifies that whenever a message "You feel hungry" is shown, the user is prompted with more-prompt, and a message matching "You displaced <something>." is not shown at all.

The order of the defined MSGTYPE lines is important; the last matching rule is used. Put the general case first, exceptions below them.

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9.11. Configuring Menu Colors

Some platforms allow you to define colors used in menu lines when the line matches a user-defined pattern. At this time the tty, curses, win32tty and win32gui interfaces support this.

In general, the configuration file entries to describe the menu color map- pings look like this:

MENUCOLOR="pattern"=color&attribute

pattern - the pattern to match; color - the color to use for lines matching the pat- tern; attribute - the attribute to use for lines matching the pattern. The attribute is optional, and if left out, you must also leave out the preced- ing ampersand. If no attribute is defined, no attribute is used.

The pattern should be a regular expression.

Allowed colors are black, red, green, brown, blue, magenta, cyan, gray, orange, light-green, yellow, light-blue, light-ma- genta, light-cyan, and white. And no-color, the default fore- ground color, which isn't necessarily the same as any of the other colors.

Allowed attributes are none, bold, dim, underline, blink, and inverse. "Normal" is a synonym for "none". Note that the platform used may inter- pret the attributes any way it wants.

Here's an example of menu colors using NetHack's internal pat- tern matching facility:

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MENUCOLOR="* blessed `green MENUCOLOR` cursed `red MENUCOLOR` cursed *(being worn)"=red&underline

specifies that any menu line with " blessed " contained in it will be shown in green color, lines with " cursed " will be shown in red, and lines with " cursed " followed by "(being worn)" on the same line will be shown in red color and under- lined. You can have multiple MENUCOLOR entries in your config- uration file, and the last MENUCOLOR line that matches a menu line will be used for the line.

Note that if you intend to have one or more color specifica- tions match " uncursed ", you will probably want to turn the im- plicit$_{uncursed}$ option off so that all items known to be uncursed are actually displayed with the "uncursed" description.

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9.12. Configuring User Sounds

Some platforms allow you to define sound files to be played when a mes- sage that matches a user-defined pattern is delivered to the message window. At this time the Qt port and the win32tty and win32gui ports support the use of user sounds.

The following configuration file entries are relevant to mapping user sounds to messages:

SOUNDDIR The directory that houses the sound files to be played.

SOUND An entry that maps a sound file to a user-specified message pattern. Each SOUND entry is broken down into the following parts:

MESG - message window mapping (the only one supported in 3.6); pat- tern - the pattern to match; sound file - the sound file to play; volume - the volume to be set while playing the sound file.

The pattern should be a POSIX extended regular expression.

9.13. Configuring Status Hilites

Your copy of NetHack may have been compiled with support for "Status Hilites". If so, you can customize your game display by setting thresholds to change the color or appearance of fields in the status display.

The format for defining status colors is:

OPTION=hilite$_{status}$:field-name/behavior/color&attributes

For example, the following line in your configuration file will cause the hitpoints field to display in the color red if your hitpoints drop to or below a threshold of 30%:

OPTION=hilite$_{status}$:hitpoints/<=30%/red/normal

(That example is actually specifying red&normal for <=30% and no- color&normal for >30%.)

For another example, the following line in your configura- tion file will cause wisdom to be displayed red if it drops and green if it rises:

OPTION=hilite$_{status}$:wisdom/down/red/up/green

Allowed colors are black, red, green, brown, blue, magenta, cyan, gray, orange, light-green, yellow, light-blue, light-

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magenta, light-cyan, and white. And "no-color", the default foreground color on the display, which is not necessarily the same as black or white or any of the other colors.

Allowed attributes are none, bold, dim, underline, blink, and inverse. "Normal" is a synonym for "none"; they should not be used in combination with any of the other attributes.

To specify both a color and an attribute, use '&' to combine them. To specify multiple attributes, use '+' to combine those. For example: "magenta&inverse+dim".

Note that the display may substitute or ignore particular attributes depending upon its capabilities, and in general may interpret the attributes any way it wants. For example, on some display systems a request for bold might yield blink or vice ver- sa. On others, issuing an attribute request while another is al- ready set up will replace the earlier attribute rather than com- bine with it. Since NetHack issues attribute requests sequen- tially (at least with the tty interface) rather than all at once, the only way a situation like that can be controlled is to speci- fy just one attribute.

You can adjust the appearance of the following status fields: title dungeon-level experience-level strength gold experience dexterity hitpoints HD con-stitution hitpoints-max time intelligence power hunger wisdom power-max carrying-capacity charisma armor-class condition alignment score

The pseudo-field "characteristics" can be used to set all six of Str, Dex, Con, Int, Wis, and Cha at once. "HD" is "hit dice", an approximation of experience level displayed when polymorphed. "experience", "time", and "score" are condition- ally displayed depending upon your other option set-tings.

Instead of a behavior, "condition" takes the following condi- tion flags: stone, slime, strngl, foodpois, termill, blind, deaf, stun, conf, hallu, lev, fly, and ride. You can use "ma- jor$_{troubles}$" as an alias for stone through termill, "mi- nor$_{troubles}$" for blind through hallu, "movement" for lev, fly, and ride, and "all" for every condition.

Allowed behaviors are "always", "up", "down", "changed", a per- centage or absolute number threshold, or text to match against.

- "always" will set the default attributes for that field.

- "up", "down" set the field attributes for when the field value changes upwards or downwards. This attribute times

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out after statushilites turns.

- "changed" sets the field attribute for when the field val- ue changes. This attribute times out after statushilites turns. (If a field has both a "changed" rule and an "up" or "down" rule which matches a change in the field's val- ue, the "up" or "down" one takes precedence.)

- percentage sets the field attribute when the field value matches the percentage. It is specified as a number be- tween 0 and 100, followed by '%' (percent sign). If the percentage is prefixed with '<=' or '>=', it also matches when value is below or above the percentage. Use pre- fix '<' or '>' to match when strictly below or above. (The numeric limit is relaxed slightly for those: >-1% and <101% are allowed.) Only four fields support percentage rules. Percentages for "hitpoints" and "power" are straightforward; they're based on the corresponding maxi- mum field. Percentage highlight rules are also allowed for "experience level" and "experience points" (valid when the showexp option is en- abled). For those, the percentage is based on the progress from the start of the current ex- perience level to the start of the next level. So if lev- el 2 starts at 20 points and level 3 starts at 40 points, having 30 points is 50% and 35 points is 75%. 100% is unattainable for ex- perience because you'll gain a level and the calculations will be reset for that new level, but a rule for =100% is allowed and matches the special case of being exactly 1 experience point short of the next lev- el.

- absolute value sets the attribute when the field value matches that number. The number must be 0 or higher, ex- cept for "armor-class' which allows negative values, and may optionally be preceded by '='. If the number is pre- ceded by '<=' or '>=' instead, it also matches when value is below or above. If the prefix is '<' or '>', only match when strictly above or below.

- text match sets the attribute when the field value matches the text. Text matches can only be used for "alignment", "carrying-capacity",

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"hunger", "dungeon-level", and "ti- tle". For title, only the role's rank title is tested; the character's name is ignored.

The in-game options menu can help you determine the correct syntax for a configuration file.

The whole feature can be disabled by setting option sta- tushilites to 0.

Example hilites:

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OPTION=hilite$_{\text{status}}$: gold/up/yellow/down/brown OPTION=hilite$_{\text{status}}$: characteristics/up/green/down/red OPTION=hilite$_{\text{status}}$: hitpoints/100%/gray&normal OPTION=hilite$_{\text{status}}$: hitpoints/<100%/green&normal OPTION=hilite$_{\text{status}}$: hitpoints/<66%/yellow&normal OPTION=hilite$_{\text{status}}$: hitpoints/<50%/orange&normal OPTION=hilite$_{\text{status}}$: hitpoints/<33%/red&bold OPTION=hilite$_{\text{status}}$: hit-points/<15%/red&inverse OPTION=hilite$_{\text{status}}$: condition/major/orange&inverse OPTION=hilite$_{\text{status}}$: condition/lev+fly/red&inverse

9.14. Modifying NetHack Symbols

NetHack can load entire symbol sets from the symbol file.

The options that are used to select a particular symbol set from the symbol file are:

symset Set the name of the symbol set that you want to load.

roguesymset Set the name of the symbol set that you want to load for dis- play on the rogue level.

You can also override one or more symbols using the SYMBOLS and ROGUESYMBOLS configuration file options. Symbols are speci- fied as name:value pairs. Note that NetHack escape-processes the value string in conventional C fashion. This means that \ is a prefix to take the following character literally. Thus \ needs to be represented as \The special prefix form switches on the meta bit in the symbol value, and the ˆ prefix causes the following character to be treated as a control character.

NetHack Symbols Symbol Name Description

S$_{\text{air}}$ (air) _ S$_{\text{altar}}$ (altar) " S$_{\text{amulet}}$ (amulet) A S$_{\text{angel}}$ (angelic being) a S$_{\text{ant}}$ (ant or other insect) ˆ S$_{\text{antimagictrap}}$ (anti-magic field) [S$_{\text{armor}}$ (suit or piece of armor) [S$_{\text{armour}}$ (suit or piece of armor) ˆ S$_{\text{arrowtrap}}$ (arrow trap) 0 S$_{\text{ball}}$ (iron ball)

B S$_{\text{bat}}$ (bat or bird) ˆ S$_{\text{beartrap}}$ (bear trap)

• S$_{\text{blcorn}}$ (bottom left corner)

b S$_{\text{blob}}$ (blob)

- S_{book} (spellbook)

) $S_{boomleft}$ (boomerang open left) ($S_{boomright}$ (boomerang open right) '
$S_{boulder}$ (boulder)

- S_{brcorn} (bottom right corner)

C $S_{centaur}$ (centaur) _ S_{chain} (iron chain)
  c $S_{cockatrice}$ (cockatrice) \$ S_{coin} (pile of coins)

- S_{crwall} (wall)

  ˆ $S_{darttrap}$ (dart trap) & S_{demon} (major demon)

- $S_{digbeam}$ (dig beam)

> $S_{dnladder}$ (ladder down) > $S_{dnstair}$ (staircase down) d S_{dog} (dog or other
canine) D S_{dragon} (dragon) ; S_{eel} (sea monster) E $S_{elemental}$ (elemental) /
$S_{explode1}$ (explosion top left)

- $S_{explode2}$ (explosion top center)

\ $S_{explode3}$ (explosion top right)

$S_{explode4}$ (explosion middle left)

$S_{explode5}$ (explosion middle center)

$S_{explode6}$ (explosion middle right)

\ $S_{explode7}$ (explosion bottom left)

- $S_{explode8}$ (explosion bottom center)

/ $S_{explode9}$ (explosion bottom right) e S_{eye} (eye or sphere) ˆ $S_{fallingrocktrap}$
(falling rock trap) f S_{feline} (cat or other feline) ˆ $S_{firetrap}$ (fire trap) ! $S_{flashbeam}$
(flash beam) % S_{food} (piece of food) { $S_{fountain}$ (fountain) F S_{fungus} (fungus
or mold)

- S_{gem} (gem or rock) S_{ghost} (ghost)

H S_{giant} (giant humanoid) G S_{gnome} (gnome) ' S_{golem} (golem)

S_{grave} (grave)

g $S_{gremlin}$ (gremlin)

- S_{hbeam} (horizontal beam [zap animation])

- S_{hcdoor} (closed door in horizontal wall)

. $S_{hodbridge}$ (horizontal lowered drawbridge)

S_{hodoor} (open door in horizontal wall)

^ S_{hole} (hole) @ S_{human} (human or elf) h $S_{humanoid}$ (humanoid)

- S_{hwall} (horizontal wall)

. S_{ice} (ice) i S_{imp} (imp or minor demon) I $S_{invisible}$ (invisible monster) J $S_{jabberwock}$ (jabberwock) j S_{jelly} (jelly) k S_{kobold} (kobold) K S_{kop} (Keystone Kop) ^ $S_{landmine}$ (land mine) } S_{lava} (molten lava) l $S_{leprechaun}$ (leprechaun) ^ $S_{levelteleporter}$ (level teleporter) L S_{lich} (lich) y S_{light} (light)

`S_lizard`   `(lizard)`

\ S_{lslant} (diagonal beam [zap animation]) ^ $S_{magicportal}$ (magic portal) ^ $S_{magictrap}$ (magic trap) m S_{mimic} (mimic)] $S_{mimicdef}$ (mimic) M S_{mummy} (mummy) N S_{naga} (naga) . S_{ndoor} (doorway without door) n S_{nymph} (nymph) O S_{ogre} (ogre) o S_{orc} (orc) p $S_{piercer}$ (piercer) ^ S_{pit} (pit)
^ $S_{polymorphtrap}$ (polymorph trap) } S_{pool} (water) ! S_{potion} (potion) P $S_{pudding}$ (pudding or ooze) q $S_{quadruped}$ (quadruped) Q $S_{quantmech}$ (quantum mechanic) = S_{ring} (ring) ` S_{rock} (boulder or statue) r S_{rodent} (rodent) ^ $S_{rollingbouldertrap}$ (rolling boulder trap) . S_{room} (floor of a room) / S_{rslant} (diagonal beam [zap animation]) ^ $S_{rusttrap}$ (rust trap) R $S_{rustmonst}$ (rust monster or disenchanter) ? S_{scroll} (scroll)
^ $S_{sleepinggastrap}$ (sleeping gas trap) S S_{snake} (snake) s S_{spider} (arachnid or centipede) ^ $S_{spikedpit}$ (spiked pit) ^ $S_{squeakyboard}$ (squeaky board) 0 S_{ss1} (magic shield 1 of 4)
@ S_{ss3} (magic shield 3 of 4)

- S_{ss4} (magic shield 4 of 4)

^ $S_{statuetrap}$ (statue trap) S_{stone} (solid rock or unexplored terrain or dark part of a room)] $S_{strangeobj}$ (strange object)

- S_{swbc} (swallow bottom center)

\ S_{swbl} (swallow bottom left) / S_{swbr} (swallow bottom right)

$$S_{swml} \text{ (swallow middle left)}$$
$$S_{swmr} \text{ (swallow middle right)}$$

- S_{swtc} (swallow top center)

/ S_{swtl} (swallow top left) \ S_{swtr} (swallow top right)

- S_{tdwall} (wall)

^ $S_{teleportationtrap}$ (teleportation trap) \ S_{throne} (opulent throne)

- S_{tlcorn} (top left corner)

$$S_{tlwall} \text{ (wall)}$$

(S_{tool} (useful item (pick-axe, key, lamp...)) ^ $S_{trapdoor}$ (trap door) t $S_{trapper}$ (trapper or lurker above)

- S_{trcorn} (top right corner)

T S_{troll} (troll)

$$S_{trwall} \text{ (wall)}$$

- S_{tuwall} (wall)

U S_{umber} (umber hulk) u $S_{unicorn}$ (unicorn or horse) < $S_{upladder}$ (ladder up) < $S_{upstair}$ (staircase up) V $S_{vampire}$ (vampire)

$$S_{vbeam} \text{ (vertical beam [zap animation])}$$

- S_{vcdoor} (closed door in vertical wall)

. S_{venom} (splash of venom) ^ $S_{vibratingsquare}$ (vibrating square) . $S_{vodbridge}$ (vertical lowered drawbridge)

- S_{vodoor} (open door in vertical wall)

v S_{vortex} (vortex)

$$S_{vwall} \text{ (vertical wall)}$$

/ S_{wand} (wand) } S_{water} (water)) S_{weapon} (weapon) " S_{web} (web) w S_{worm} (worm) ~ $S_{wormtail}$ (long worm tail) W S_{wraith} (wraith) x S_{xan} (xan or other extraordinary insect) X S_{xorn} (xorn) Y S_{yeti} (apelike creature) Z S_{zombie} (zombie) z S_{zruty} (zruty)

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$S_{petoverride}$ (any pet if ACCESSIBILITY=1 is set) $S_{herooverride}$ (hero if ACCESSIBILITY=1 is set)

Notes:

- Several symbols in this table appear to be blank. They are the space character, except for $S_{petoverride}$ and $S_{herooverride}$ which don't have any default value and can only be used if en- abled in the "sysconf" file.

- S_{rock} is misleadingly named; rocks and stones use S_{gem}. Statues and boulders are the rock being referred to, but since version 3.6.0, statues are displayed as the monster they de- pict. So S_{rock} is only used for boulders and not used at all if overridden by the more specific $S_{boulder}$.

9.15. Configuring NetHack for Play by the Blind

NetHack can be set up to use only standard ASCII characters for making maps of the dungeons. This makes the MS-DOS versions of NetHack completely accessible to the blind who use speech and/or Braille access technologies. Players will require a good working knowledge of their screen-reader's review features, and will have to know how to navigate horizontally and vertically character by character. They will also find the search capabilities of their screen-readers to be quite valuable. Be certain to examine this Guidebook before playing so you have an idea what the screen layout is like. You'll also need to be able to locate the PC cursor. It is always where your character is located. Merely searching for an @-sign will not always find your charac- ter since there are other humanoids represented by the same sign. Your screen-reader should also have a function which gives you the row and column of your review cursor and the PC cursor. These co-ordinates are often useful in giving players a better sense of the overall location of items on the screen.

NetHack can also be compiled with support for sending the game messages to an external program, such as a text-to-speech synthesizer. If the "#version" extended command shows "external program as a message handler", your NetHack has been compiled with the capability. When compiling

NetHack from source on Linux and other POSIX systems, define MSGHAN-DLER to enable it. To use the capability, set the environment variable $NETHACK_{MSGHANDLER}$ to an executable, which will be executed with the game message as the program's only parameter.

While it is not difficult for experienced users to edit the defaults.nh file to accomplish this, novices may find this task somewhat daunting. Included within the "symbols" file of all of- ficial distributions of NetHack is a symset called NHAccess. Se- lecting that symset in your configuration file will cause the game to run in a manner accessible to the blind. After you have gained some experience with the game and with editing files, you may want to alter settings via SYMBOLS= and ROGUESYMBOLS= in your

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configuration file to better suit your preferences. See the pre- vious section for the special symbols $S_{pet override}$ to force a consistent symbol for all pets and $S_{hero override}$ to force a unique symbol for the player character if accessibility is en- abled in the sysconf file.

The most crucial settings to make the game more accessible are:

symset:NHAccess Load a symbol set appropriate for use by blind players.

roguesymset:NHAccess Load a symbol set for the rogue level that is appropriate for use by blind players.

menustyle:traditional This will assist in the interface to speech synthesizers.

$nomenu_{overlay}$ Show menus on a cleared screen and aligned to the left edge.

$number_{pad}$ A lot of speech access programs use the number-pad to review the screen. If this is the case, disable the $number_{pad}$ option and use the traditional Rogue-like commands.

autodescribe Automatically describe the terrain under the cursor when tar- geting.

$mention_{walls}$ Give feedback messages when walking towards a wall or when travel command was interrupted.

$whatis_{coord}$:compass When targeting with cursor, describe the cursor position with coordinates relative to your character.

$whatis_{filter}$:area When targeting with cursor, filter possible locations so only those in the same area (eg. same room, or same corridor) are considered.

$whatis_{moveskip}$ When targeting with cursor and using fast-move, skip the same glyphs instead of moving 8 units at a time.

$nostatus_{updates}$ Prevent updates to the status lines at the bottom of the screen, if your screen-reader reads those lines. The same in- formation can

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be seen via the "#attributes" command.

9.16. Global Configuration for System Administrators

If NetHack is compiled with the SYSCF option, a system ad- ministrator should set up a global configuration; this is a file in the same format as the traditional per-user configuration file (see above). This file should be named sysconf and placed in the same directory as the other NetHack support files. The options recognized in this file are listed below. Any option not set us- es a compiled-in default (which may not be appropriate for your system).

WIZARDS = A space-separated list of user names who are allowed to play in debug mode (commonly referred to as wizard mode). A value of a single asterisk (*) allows anyone to start a game in debug mode.

SHELLERS = A list of users who are allowed to use the shell es- cape command (!). The syntax is the same as WIZARDS.

EXPLORERS = A list of users who are allowed to use the explore mode. The syntax is the same as WIZARDS.

MAXPLAYERS = Limit the maximum number of games that can be run- ning at the same time.

SUPPORT = A string explaining how to get local support (no de- fault value).

RECOVER = A string explaining how to recover a game on this system (no default value).

SEDUCE = 0 or 1 to disable or enable, respectively, the SEDUCE option. When disabled, incubi and succubi behave like nymphs.

$CHECK_{PLNAME}$ = Setting this to 1 will make the EXPLORERS, WIZ- ARDS, and SHELLERS check for the player name instead of the us- er's login name.

$CHECK_{SAVEUID}$ = 0 or 1 to disable or enable, respectively, the UID (used identification number) checking for save files (to verify that the user who is restoring is the same one who saved).

The following options affect the score file:

PERSMAX = Maximum number of entries for one person.

ENTRYMAX = Maximum number of entries in the score file.

POINTSMIN = Minimum number of points to get an entry in the score file.

$PERS_{IS\,UID}$ = 0 or 1 to use user names or numeric userids, re- spectively, to identify unique people for the score file.

$\text{MAX}_{\text{STATUENAMERANK}}$ = Maximum number of score file entries to use for random statue names (default is 10).

ACCESSIBILITY = 0 or 1 to disable or enable, respectively, the ability for players to set $S_{\text{petoverride}}$ and $S_{\text{herooverride}}$ symbols in their configuration file.

$\text{PORTABLE}_{\text{DEVICEPATHS}}$ = 0 or 1 Windows OS only, the game will look for all of its external files, and write to all of its output files in one place rather than at the standard loca- tions.

DUMPLOGFILE = A filename where the end-of-game dumplog is saved. Not defining this will prevent dumplog from being cre- ated. Only available if your game is compiled with DUMPLOG. Al- lows the following placeholders:

%% - literal '%' %v - version (eg. "3.6.3-0") %u - game UID %t - game start time, UNIX timestamp format %T - current time, UNIX timestamp format %d - game start time, YYYYMMDDhhmmss format %D - current time, YYYYMMDDhhmmss format %n - player name %N - first character of player name

1. Scoring

   NetHack maintains a list of the top scores or scorers on

your machine, depending on how it is set up. In the latter case, each account on the machine can post only one non-winning score on this list. If you score higher than someone else on this list, or better your previous score, you will be inserted in the proper place under your current name. How many scores are kept can also be set up when NetHack is compiled.

Your score is chiefly based upon how much experience you gained, how much loot you accumulated, how deep you explored, and how the game ended. If you quit the game, you escape with all of your gold intact. If, however, you get killed in the Mazes of Menace, the guild will only hear about 90% of your gold when your corpse is discovered (adventurers have been known to collect finder's fees). So, consider whether you want to take one last hit at that monster and possibly live, or quit and stop with whatever you have. If you quit, you keep all your gold, but if you swing and live, you might find more.

If you just want to see what the current top players/games list is, you can type nethack -s all on most versions.

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1. Explore mode

NetHack is an intricate and difficult game. Novices might

falter in fear, aware of their ignorance of the means to survive. Well, fear not. Your dungeon comes equipped with an "explore" or "discovery" mode that enables you to keep old save files and cheat death, at the paltry cost of not getting on the high score list.

There are two ways of enabling explore mode. One is to start the game with the -X command-line switch or with the play- mode:explore option. The other is to issue the "#exploremode" extended command while already playing the game. Starting a new game in explore mode provides your character with a wand of wish- ing in initial inventory; switching during play does not. The other benefits of explore mode are left for the trepid reader to discover.

11.1. Debug mode

Debug mode, also known as wizard mode, is undocumented aside from this brief description and the various "debug mode only" commands listed among the command descriptions. It is intended for tracking down problems within the program rather than to pro- vide god-like powers to your character, and players who attempt debugging are expected to figure out how to use it themselves. It is initiated by starting the game with the -D command-line switch or with the playmode:debug option.

For some systems, the player must be logged in under a par- ticular user name to be allowed to use debug mode; for others, the hero must be given a particular character name (but may be any role; there's no connection between "wizard mode" and the Wizard role). Attempting to start a game in debug mode when not allowed or not available will result in falling back to explore mode instead.

1. Credits

The original hack game was modeled on the Berkeley UNIX

rogue game. Large portions of this paper were shamelessly cribbed from A Guide to the Dungeons of Doom, by Michael C. Toy and Kenneth C. R. C. Arnold. Small portions were adapted from Further Exploration of the Dungeons of Doom, by Ken Arromdee.

NetHack is the product of literally dozens of people's work. Main events in the course of the game development are described below:

Jay Fenlason wrote the original Hack, with help from Kenny Woodland, Mike Thome and Jon Payne.

Andries Brouwer did a major re-write, transforming Hack into a very different game, and published (at least) three versions

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(1.0.1, 1.0.2, and 1.0.3) for UNIX machines to the Usenet.

Don G. Kneller ported Hack 1.0.3 to Microsoft C and MS-DOS, producing PC HACK 1.01e, added support for DEC Rainbow graphics in version 1.03g, and went on to produce at least four more ver- sions (3.0, 3.2, 3.51, and 3.6).

R. Black ported PC HACK 3.51 to Lattice C and the Atari 520/1040ST, producing ST Hack 1.03.

Mike Stephenson merged these various versions back together, incorporating many of the added features, and produced NetHack 1.4. He then coordinated a cast of thousands in enhancing and debugging NetHack 1.4 and released NetHack versions 2.2 and 2.3.

Later, Mike coordinated a major rewrite of the game, heading a team which included Ken Arromdee, Jean-Christophe Collet, Steve Creps, Eric Hendrickson, Izchak Miller, John Rupley, Mike Threep- oint, and Janet Walz, to produce NetHack 3.0c.

NetHack 3.0 was ported to the Atari by Eric R. Smith, to OS/2 by Timo Hakulinen, and to VMS by David Gentzel. The three of them and Kevin Darcy later joined the main NetHack Development Team to produce subsequent revisions of 3.0.

Olaf Seibert ported NetHack 2.3 and 3.0 to the Amiga. Norm Meluch, Stephen Spackman and Pierre Martineau designed overlay code for PC NetHack 3.0. Johnny Lee ported NetHack 3.0 to the Macintosh. Along with various other Dungeoneers, they continued to enhance the PC, Macintosh, and Amiga ports through the later revisions of 3.0.

Headed by Mike Stephenson and coordinated by Izchak Miller and Janet Walz, the NetHack Development Team which now included Ken Arromdee, David Cohrs, Jean-Christophe Collet, Kevin Darcy, Matt Day, Timo Hakuli-nen, Steve Linhart, Dean Luick, Pat Rankin, Eric Raymond, and Eric Smith undertook a radical revision of 3.0. They re-structured the game's design, and re-wrote major parts of the code. They added multiple dungeons, a new display, special individual character quests, a new endgame and many other new features, and produced NetHack 3.1.

Ken Lorber, Gregg Wonderly and Greg Olson, with help from Richard Addison, Mike Passaretti, and Olaf Seibert, developed NetHack 3.1 for the Amiga.

Norm Meluch and Kevin Smolkowski, with help from Carl Sche- lin, Stephen Spackman, Steve VanDevender, and Paul Winner, ported NetHack

3.1 to the PC.

Jon W{tte and Hao-yang Wang, with help from Ross Brown, Mike Engber, David Hairston, Michael Hamel, Jonathan Handler, Johnny Lee, Tim Lennan, Rob Menke, and Andy Swanson, developed NetHack 3.1 for the Macintosh, porting it for MPW. Building on their

development, Bart House added a Think C port.

Timo Hakulinen ported NetHack 3.1 to OS/2. Eric Smith port- ed NetHack 3.1 to the Atari. Pat Rankin, with help from Joshua Delahunty, was responsible for the VMS version of NetHack 3.1. Michael Allison ported NetHack 3.1 to Windows NT.

Dean Luick, with help from David Cohrs, developed NetHack 3.1 for X11. Warwick Allison wrote a tiled version of NetHack for the Atari; he later contributed the tiles to the NetHack De- velopment Team and tile support was then added to other plat- forms.

The 3.2 NetHack Development Team, comprised of Michael Alli- son, Ken Arromdee, David Cohrs, Jessie Collet, Steve Creps, Kevin Darcy, Timo Hakulinen, Steve Linhart, Dean Luick, Pat Rankin, Er- ic Smith, Mike Stephenson, Janet Walz, and Paul Winner, released version 3.2 in April of 1996.

Version 3.2 marked the tenth anniversary of the formation of the development team. In a testament to their dedication to the game, all thirteen members of the original NetHack Development Team remained on the team at the start of work on that release. During the interval between the release of 3.1.3 and 3.2, one of the founding members of the NetHack Development Team, Dr. Izchak Miller, was diagnosed with cancer and passed away. That release of the game was dedicated to him by the development and porting teams.

During the lifespan of NetHack 3.1 and 3.2, several enthusi- asts of the game added their own modifications to the game and made these "variants" publicly available:

Tom Proudfoot and Yuval Oren created NetHack++, which was quickly renamed NetHack–. Working independently, Stephen White wrote NetHack Plus. Tom Proudfoot later merged NetHack Plus and his own NetHack– to produce SLASH. Larry Stewart-Zerba and War- wick Allison improved the spell casting system with the Wizard Patch. Warwick Allison also ported NetHack to use the Qt inter- face.

Warren Cheung combined SLASH with the Wizard Patch to pro- duce Slash'EM, and with the help of Kevin Hugo, added more fea- tures. Kevin

later joined the NetHack Development Team and in- corporated the best of these ideas in NetHack 3.3.

The final update to 3.2 was the bug fix release 3.2.3, which was released simultaneously with 3.3.0 in December 1999 just in time for the Year 2000.

The 3.3 NetHack Development Team, consisting of Michael Al- lison, Ken Arromdee, David Cohrs, Jessie Collet, Steve Creps, Kevin Darcy, Timo Hakulinen, Kevin Hugo, Steve Linhart, Ken Lor- ber, Dean Luick, Pat Rankin, Eric Smith, Mike Stephenson, Janet

Walz, and Paul Winner, released 3.3.0 in December 1999 and 3.3.1 in August of 2000.

Version 3.3 offered many firsts. It was the first version to separate race and profession. The Elf class was removed in pref- erence to an elf race, and the races of dwarves, gnomes, and orcs made their first appearance in the game alongside the familiar human race. Monk and Ranger roles joined Archeologists, Barbar- ians, Cavemen, Healers, Knights, Priests, Rogues, Samurai, Tourists, Valkyries and of course, Wizards. It was also the first version to allow you to ride a steed, and was the first version to have a publicly available web-site listing all the bugs that had been discovered. Despite that constantly growing bug list, 3.3 proved stable enough to last for more than a year and a half.

The 3.4 NetHack Development Team initially consisted of Michael Alli- son, Ken Arromdee, David Cohrs, Jessie Collet, Kevin Hugo, Ken Lorber, Dean Luick, Pat Rankin, Mike Stephenson, Janet Walz, and Paul Winner, with Warwick Allison joining just before the release of NetHack 3.4.0 in March 2002.

As with version 3.3, various people contributed to the game as a whole as well as supporting ports on the different platforms that NetHack runs on:

Pat Rankin maintained 3.4 for VMS.

Michael Allison maintained NetHack 3.4 for the MS-DOS plat- form. Paul Winner and Yitzhak Sapir provided encouragement.

Dean Luick, Mark Modrall, and Kevin Hugo maintained and en- hanced the Macintosh port of 3.4.

Michael Allison, David Cohrs, Alex Kompel, Dion Nicolaas, and Yitzhak Sapir maintained and enhanced 3.4 for the Microsoft Windows platform. Alex Kompel contributed a new graphical inter- face for the Windows port. Alex Kompel also contributed a Win- dows CE port for 3.4.1.

Ron Van Iwaarden was the sole maintainer of NetHack for OS/2 the past several releases. Unfortunately Ron's last OS/2 machine stopped working in

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early 2006. A great many thanks to Ron for keeping NetHack alive on OS/2 all these years.

Janne Salmijarvi and Teemu Suikki maintained and enhanced the Amiga port of 3.4 after Janne Salmijarvi resurrected it for 3.3.1.

Christian "Marvin" Bressler maintained 3.4 for the Atari af- ter he resurrected it for 3.3.1.

The release of NetHack 3.4.3 in December 2003 marked the be- ginning of a long release hiatus. 3.4.3 proved to be a remarkably

stable version that provided continued enjoyment by the community for more than a decade. The NetHack Development Team slowly and quietly continued to work on the game behind the scenes during the tenure of 3.4.3. It was during that same period that several new variants emerged within the NetHack community. Notably sporkhack by Derek S. Ray, unnethack by Patric Mueller, nitrohack and its successors originally by Daniel Thaler and then by Alex Smith, and Dynahack by Tung Nguyen. Some of those variants con- tinue to be developed, maintained, and enjoyed by the community to this day.

In September 2014, an interim snapshot of the code under de- velopment was released publicly by other parties. Since that code was a work-in-progress and had not gone through the process of debugging it as a suitable release, it was decided that the ver- sion numbers present on that code snapshot would be retired and never used in an official NetHack release. An announcement was posted on the NetHack Development Team's official nethack.org website to that effect, stating that there would never be a 3.4.4, 3.5, or 3.5.0 official release version.

In January 2015, preparation began for the release of NetHack 3.6.

At the beginning of development for what would eventually get released as 3.6.0, the NetHack Development Team consisted of Warwick Allison, Michael Allison, Ken Arromdee, David Cohrs, Jessie Collet, Ken Lorber, Dean Luick, Pat Rankin, Mike Stephen- son, Janet Walz, and Paul Winner. In early 2015, ahead of the release of 3.6.0, new members Sean Hunt, Pasi Kallinen, and Derek S. Ray joined the NetHack Development Team.

Near the end of the development of 3.6.0, one of the signif- icant inspirations for many of the humorous and fun features found in the game, author Terry Pratchett, passed away. NetHack 3.6.0 introduced a tribute to him.

3.6.0 was released in December 2015, and merged work done by the development team since the release of 3.4.3 with some of the beloved community patches. Many bugs were fixed and some code was restructured.

The NetHack Development Team, as well as Steve VanDevender and Kevin Smolkowski, ensured that NetHack 3.6 continued to oper- ate on various UNIX flavors and maintained the X11 interface.

Ken Lorber, Haoyang Wang, Pat Rankin, and Dean Luick main- tained the port of NetHack 3.6 for Mac OSX.

Michael Allison, David Cohrs, Bart House, Pasi Kallinen, Alex Kompel, Dion Nicolaas, Derek S. Ray and Yitzhak Sapir main- tained the port of NetHack 3.6 for Microsoft Windows.

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Pat Rankin attempted to keep the VMS port running for NetHack 3.6, hindered by limited access. Kevin Smolkowski has up- dated and tested it for the most recent version of OpenVMS (V8.4 as of this writing) on Alpha and Integrity (aka Itanium aka IA64) but not VAX.

Ray Chason resurrected the msdos port for 3.6 and contrib- uted the necessary updates to the community at large.

In late April 2018, several hundred bug fixes for 3.6.0 and some new features were assembled and released as NetHack 3.6.1. The NetHack Development Team at the time of release of 3.6.1 con- sisted of Warwick Allison, Michael Allison, Ken Arromdee, David Cohrs, Jessie Collet, Pasi Kallinen, Ken Lorber, Dean Luick, Patric Mueller, Pat Rankin, Derek S. Ray, Alex Smith, Mike Stephenson, Janet Walz, and Paul Winner.

In early May 2019, another 320 bug fixes along with some en- hancements and the adopted curses window port, were released as 3.6.2.

Bart House, who had contributed to the game as a porting team participant for decades, joined the NetHack Development Team in late May 2019.

NetHack 3.6.3 was released on December 5, 2019 containing over 190 bug fixes to NetHack 3.6.2.

NetHack 3.6.4 was released on December 18, 2019 containing a security fix and a few bug fixes.

NetHack 3.6.5 was released on January 27, 2020 containing some security fixes and a small number of bug fixes.

The official NetHack web site is maintained by Ken Lorber at `https://www.nethack.org/`.

12.1. SPECIAL THANKS

On behalf of the NetHack community, thank you very much once again to M. Drew Streib and Pasi Kallinen for providing a public NetHack server at nethack.alt.org. Thanks to Keith Simpson and Andy Thomson for hard-fought.org. Thanks to all those unnamed dun- geoneers who invest their

time and effort into annual NetHack tournaments such as Junethack, The
November NetHack Tournament and in days past, devnull.net (gone for now,
but not forgotten).

● - - - - - - - - -

From time to time, some depraved individual out there in netland sends a
particularly intriguing modification to help out with the game. The NetHack
Development Team sometimes makes note of the names of the worst of these
miscreants in this, the list of Dungeoneers:

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Adam Aronow J. Ali Harlow Mikko Juola Alex Kompel Janet Walz
Nathan Eady Alex Smith Janne Salmijarvi Norm Meluch Andreas Dorn
Jean-Christophe Collet Olaf Seibert Andy Church Jeff Bailey Pasi Kalli-
nen Andy Swanson Jochen Erwied Pat Rankin Andy Thomson John Kallen
Patric Mueller Ari Huttunen John Rupley Paul Winner Bart House John S.
Bien Pierre Martineau Benson I. Margulies Johnny Lee Ralf Brown Bill Dyer
Jon W{tte Ray Chason Boudewijn Waijers Jonathan Handler Richard Addi-
son Bruce Cox Joshua Delahunty Richard Beigel Bruce Holloway Karl Garri-
son Richard P. Hughey Bruce Mewborne Keizo Yamamoto Rob Menke Carl
Schelin Keith Simpson Robin Bandy Chris Russo Ken Arnold Robin Johnson
David Cohrs Ken Arromdee Roderick Schertler David Damerell Ken Lorber
Roland McGrath David Gentzel Ken Washikita Ron Van Iwaarden David
Hairston Kevin Darcy Ronnen Miller Dean Luick Kevin Hugo Ross Brown
Del Lamb Kevin Sitze Sascha Wostmann Derek S. Ray Kevin Smolkowski
Scott Bigham Deron Meranda Kevin Sweet Scott R. Turner Dion Nicolaas
Lars Huttar Sean Hunt Dylan O'Donnell Leon Arnott Stephen Spackman
Eric Backus M. Drew Streib Stefan Thielscher Eric Hendrickson Malcolm
Ryan Stephen White Eric R. Smith Mark Gooderum Steve Creps Eric S.
Raymond Mark Modrall Steve Linhart Erik Andersen Marvin Bressler Steve
VanDevender Fredrik Ljungdahl Matthew Day Teemu Suikki Frederick Roe-
ber Merlyn LeRoy Tim Lennan Gil Neiger Michael Allison Timo Hakulinen
Greg Laskin Michael Feir Tom Almy Greg Olson Michael Hamel Tom West
Gregg Wonderly Michael Sokolov Warren Cheung Hao-yang Wang Mike En-
gber Warwick Allison Helge Hafting Mike Gallop Yitzhak Sapir Irina Rempt-
Drijfhout Mike Passaretti Izchak Miller Mike Stephenson

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7 Nethack man pages

7.1 Nethack(1) man page

```
NAME
    nethack - Exploring The Mazes of Menace

SYNOPSIS
    nethack [ -d directory ] [ -n ] [ -p profession ] [ -r race ] [ -[DX] ]
    [ -u playername ] [ -dec ] [ -ibm ] [ --version[:paste] ]

    nethack [ -d directory ] -s [ -v ] [ -p profession ] [ -r race ] [
    playernames ]

DESCRIPTION
    NetHack is a display oriented Dungeons & Dragons(tm) - like game. The
    standard tty display and command structure resemble rogue.

    Other, more graphical display options exist for most platforms.

    To get started you really only need to know two commands. The command
    ?  will give you a list of the available commands (as well as other
    information) and the command / will identify the things you see on the
    screen.

    To win the game (as opposed to merely playing to beat other people's
    high scores) you must locate the Amulet of Yendor which is somewhere
    below the 20th level of the dungeon and get it out. Few people achieve
    this; most never do. Those who have go down in history as heroes among
    heroes - and then they find ways of making the game even harder. See
    the Guidebook section on Conduct if this game has gotten too easy for
    you.

    When the game ends, whether by your dying, quitting, or escaping from
    the caves, NetHack will give you (a fragment of) the list of top scor-
    ers.  The scoring is based on many aspects of your behavior, but a
```

rough estimate is obtained by taking the amount of gold you've found in the cave plus four times your (real) experience. Precious stones may be worth a lot of gold when brought to the exit. There is a 10% penalty for getting yourself killed.

The environment variable NETHACKOPTIONS can be used to initialize many run-time options. The ? command provides a description of these options and syntax. (The -dec and -ibm command line options are equiv-alent to the decgraphics and ibmgraphics run-time options described there, and are provided purely for convenience on systems supporting multiple types of terminals.)

Because the option list can be very long (particularly when specifying graphics characters), options may also be included in a configuration file. The default is located in your home directory and named .nethackrc on Unix systems. On other systems, the default may be dif-ferent, usually NetHack.cnf. On DOS or Windows, the name is defaults.nh, while on the Macintosh or BeOS, it is NetHack Defaults. The configuration file's location may be specified by setting NETHACK-OPTIONS to a string consisting of an @ character followed by the file-name.

The -u playername option supplies the answer to the question "Who are you?". It overrides any name from the options or configuration file, USER, LOGNAME, or getlogin(), which will otherwise be tried in order. If none of these provides a useful name, the player will be asked for one. Player names (in conjunction with uids) are used to identify save files, so you can have several saved games under different names. Con-versely, you must use the appropriate player name to restore a saved game.

A playername suffix can be used to specify the profession, race, align-ment and/or gender of the character. The full syntax of the playername that includes a suffix is "name-ppp-rrr-aaa-ggg". "ppp" are at least the first three letters of the profession (this can also be specified using a separate -p profession option). "rrr" are at least the first three letters of the character's race (this can also be specified using a separate -r race option). "aaa" are at last the first three letters of the character's alignment, and "ggg" are at least the first three letters of the character's gender. Any of the parts of the suffix may

be left out.

-p profession can be used to determine the character profession, also
known as the role. You can specify either the male or female name for
the character role, or the first three characters of the role as an
abbreviation. -p @ has been retained to explicitly request that a ran-
dom role be chosen. It may need to be quoted with a backslash (\@) if
@ is the "kill" character (see "stty") for the terminal, in order to
prevent the current input line from being cleared.

Likewise, -r race can be used to explicitly request that a race be cho-
sen.

Leaving out any of these characteristics will result in you being
prompted during the game startup for the information.

The -s option alone will print out the list of your scores on the cur-
rent version. An immediately following -v reports on all versions
present in the score file. The -s may also be followed by arguments -p
and -r to print the scores of particular roles and races only. It may
also be followed by one or more player names to print the scores of the
players mentioned, by 'all' to print out all scores, or by a number to
print that many top scores.

The -n option suppresses printing of any news from the game administra-
tor.

The -D or -X option will start the game in a special non-scoring dis-
covery mode. -D will, if the player is the game administrator, start
in debugging (wizard) mode instead.

The -d option, which must be the first argument if it appears, supplies
a directory which is to serve as the playground. It overrides the
value from NETHACKDIR, HACKDIR, or the directory specified by the game
administrator during compilation (usually /usr/games/lib/nethackdir).
This option is usually only useful to the game administrator. The
playground must contain several auxiliary files such as help files, the
list of top scorers, and a subdirectory save where games are saved.

AUTHORS

Jay Fenlason (+ Kenny Woodland, Mike Thome and Jon Payne) wrote the original hack, very much like rogue (but full of bugs).

Andries Brouwer continuously deformed their sources into an entirely different game.

Mike Stephenson has continued the perversion of sources, adding various warped character classes and sadistic traps with the help of many strange people who reside in that place between the worlds, the Usenet Zone. A number of these miscreants are immortalized in the historical roll of dishonor and various other places.

The resulting mess is now called NetHack, to denote its development by the Usenet. Andries Brouwer has made this request for the distinction, as he may eventually release a new version of his own.

FILES

Run-time configuration options were discussed above and use a platform specific name for a file in a platform specific location. For Unix, the name is '.nethackrc' in the user's home directory.

All other files are in the playground directory, normally /usr/games/lib/nethackdir. If DLB was defined during the compile, the data files and special levels will be inside a larger file, normally nhdat, instead of being separate files.

```
nethack            The program itself.
data, oracles, rumors    Data files used by NetHack.
quest.dat, bogusmon     More data files.
engrave, epitaph, tribute  Still more data files.
symbols            Data file holding sets of specifications
                   for how to display monsters, objects, and
                   map features.
options            Data file containing a description of the
                   build-time option settings.
help, hh           Help data files.
cmdhelp, opthelp, wizhelp  More help data files.
*.lev              Predefined special levels.
dungeon            Control file for special levels.
```

```
     history           A short history of NetHack.
     license           Rules governing redistribution.
     record           The list of top scorers.
     logfile           An extended list of games played
                  (optional).
     xlogfile           A more detailed version of 'logfile'
                  (also optional).
     paniclog          Record of exceptional conditions
                  discovered during program execution.
     xlock.nn          Description of dungeon level 'nn' of
                  active game 'x' if there's a limit on the
                  number of simultaneously active games.
     UUcccccc.nn         Alternate form for dungeon level 'nn'
                  of active game by user 'UU' playing
                  character named 'cccccc' when there's no
                  limit on number of active games.
     perm            Lock file for xlock.0 or UUcccccc.0.
     bonesDD.nn         Descriptions of the ghost and belongings
                  of a deceased adventurer who met his
                  or her demise on level 'nn'.

     save/            A subdirectory containing saved games.

     sysconf           System-wide options. Required if
                  program is built with 'SYSCF' option
                  enabled, ignored if not.

     The location of 'sysconf' is specified at build time and can't be
     changed except by updating source file "config.h" and rebuilding the
     program.

     In a perfect world, 'paniclog' would remain empty.

ENVIRONMENT
     USER or LOGNAME     Your login name.
     HOME           Your home directory.
     SHELL           Your shell.
     TERM           The type of your terminal.
     HACKPAGER or PAGER   Replacement for default pager.
     MAIL           Mailbox file.
```

```
              MAILREADER        Replacement for default reader
                       (probably /bin/mail or /usr/ucb/mail).
              NETHACKDIR or HACKDIR  Playground.
              NETHACKOPTIONS       String predefining several NetHack
                       options.

              If the same option is specified in both NETHACKOPTIONS and .nethackrc,
              the value assigned in NETHACKOPTIONS takes precedence.

              SHOPTYPE and SPLEVTYPE can be used in debugging (wizard) mode.
              DEBUGFILES can be used if the program was built with 'DEBUG' enabled.

     SEE ALSO
          dgn_comp(6), lev_comp(6), recover(6)

     BUGS
          Probably infinite.



              Dungeons & Dragons is a Trademark of Wizards of the Coast, Inc.



                        7 December 2015            NETHACK(6)
```

7.2   Nethack recovery tool

```
     RECOVER(6)              1993              RECOVER(6)



     NAME
        recover - recover a NetHack game interrupted by disaster

     SYNOPSIS
        recover [ -d directory ] base1 base2 ...
```

DESCRIPTION

Occasionally, a NetHack game will be interrupted by disaster
when the game or the system crashes. Prior to NetHack v3.1,
these games were lost because various information like the
player's inventory was kept only in memory. Now, all per-
tinent information can be written out to disk, so such games
can be recovered at the point of the last level change.

The base options tell recover which files to process. Each
base option specifies recovery of a separate game.

The -d option, which must be the first argument if it
appears, supplies a directory which is the NetHack play-
ground. It overrides the value from NETHACKDIR, HACKDIR, or
the directory specified by the game administrator during
compilation (usually /usr/games/lib/nethackdir).

For recovery to be possible, nethack must have been compiled
with the INSURANCE option, and the run-time option check-
point must also have been on. NetHack normally writes out
files for levels as the player leaves them, so they will be
ready for return visits. When checkpointing, NetHack also
writes out the level entered and the current game state on
every level change. This naturally slows level changes down
somewhat.

The level file names are of the form base.nn, where nn is an
internal bookkeeping number for the level. The file base.0
is used for game identity, locking, and, when checkpointing,
for the game state. Various OSes use different strategies
for constructing the base name. Microcomputers use the
character name, possibly truncated and modified to be a
legal filename on that system. Multi-user systems use the
(modified) character name prefixed by a user number to avoid
conflicts, or "xlock" if the number of concurrent players is
being limited. It may be necessary to look in the play-
ground to find the correct base name of the interrupted
game. recover will transform these level files into a save
file of the same name as nethack would have used.

Since recover must be able to read and delete files from the
playground and create files in the save directory, it has
interesting interactions with game security. Giving ordi-
nary players access to recover through setuid or setgid is
tantamount to leaving the playground world-writable, with
respect to both cheating and messing up other players. For
a single-user system, this of course does not change any-
thing, so some of the microcomputer ports install recover by
default.

For a multi-user system, the game administrator may want to
arrange for all .0 files in the playground to be fed to
recover when the host machine boots, and handle game crashes
individually. If the user population is sufficiently
trustworthy, recover can be installed with the same permis-
sions the nethack executable has. In either case, recover
is easily compiled from the distribution utility directory.

NOTES
    Like nethack itself, recover will overwrite existing save-
    files of the same name. Savefiles created by recover are
    uncompressed; they may be compressed afterwards if desired,
    but even a compression-using nethack will find them in the
    uncompressed form.

SEE ALSO
    nethack(6)

BUGS
    recover makes no attempt to find out if a base name speci-
    fies a game in progress. If multiple machines share a play-
    ground, this would be impossible to determine.

    recover should be taught to use the nethack playground lock-
    ing mechanism to avoid conflicts.

January   Last change: 9   2

7.3   Nethack data librarian man page

NAME
    dlb - NetHack data librarian

SYNOPSIS
    dlb { xct } [vfIC] arguments... [files...]

DESCRIPTION
    Dlb is a file archiving tool in the spirit (and tradition)
    of tar for NetHack version 3.1 and higher. It is used to
    maintain the archive files from which NetHack reads special
    level files and other read-only information. Note that like
    tar the command and option specifiers are specified as a
    continuous string and are followed by any arguments required
    in the same order as the option specifiers.

    This facility is optional and may be excluded during NetHack
    configuration.

COMMANDS
    The x command causes dlb to extract the contents of the
    archive into the current directory.

    The c command causes dlb to create a new archive from files
    in the current directory.

    The t command lists the files in the archive.

OPTIONS AND ARGUMENTS
    v   verbose output

    f archive specify the archive. Default if f not specified
    is LIBFILE (usually the nhdat file in the playground).

    I lfile   specify the file containing the list of files to

```
     put in to or extract from the archive if no files are listed
     on the command line. Default for archive creation if no
     files are listed is LIBLISTFILE.

     C dir    change directory. Changes directory before try-
     ing to read any files (including the archive and the lfile).

EXAMPLES
     Create the default archive from the default file list:
           dlb c

     List the contents of the archive 'foo':
           dlb tf foo

AUTHOR
     Kenneth Lorber

SEE ALSO
     nethack(6), tar(1)

BUGS
     Not a good tar emulation; - does not mean stdin or stdout.
     Should include an optional compression facility. Not all
     read-only files for NetHack can be read out of an archive;
     examining the source is the only way to know which files can
     be.

Oct              Last change: 28                   2
```

7.4 Nethack dungeon compiler man page

```
DGN_COMP(6)              1995              DGN_COMP(6)

NAME
     dgn_comp - NetHack dungeon compiler

SYNOPSIS
     dgn_comp [ file ]
```

If no arguments are given, it reads standard input.

DESCRIPTION
    Dgn_comp is a dungeon compiler for NetHack version 3.2 and
    higher. It takes a description file as an argument and pro-
    duces a dungeon "script" that is to be loaded by NetHack at
    runtime.

    The purpose of this tool is to provide NetHack administra-
    tors and implementors with a convenient way to create a cus-
    tom dungeon for the game, without having to recompile the
    entire world.

GRAMMAR
    DUNGEON: name bonesmarker (base , rand) [%age]

    where name is the dungeon name, bonesmarker is a letter for
    marking bones files, (base , rand) is the number of lev-
    els, and %age is its percentage chance of being generated
    (if absent, 100% chance).

    DESCRIPTION: tag

    where tag is currently one of HELLISH, MAZELIKE, or ROGUE-
    LIKE.

    ALIGNMENT | LEVALIGN: [lawful | neutral | chaotic |
    unaligned]

    gives the alignment of the dungeon/level (default is
    unaligned).

    ENTRY: level

    the dungeon entry point. The dungeon connection attaches at
    this level of the given dungeon. If the value of level is
    negative, the entry level is calculated from the bottom of
    the dungeon, with -1 being the last level. If this line is
    not present in a dungeon description, the entry level

defaults to 1.

PROTOFILE: name

the prototypical name for dungeon level files in this
dungeon. For example, the PROTOFILE name for the dungeon
Vlad's Tower is tower.

LEVEL: name bonesmarker @ (base , rand) [%age]

where name is the level name, bonesmarker is a letter for
marking bones files, (base , rand) is the location and
%age is the generation percentage, as above.

RNDLEVEL: name bonesmarker @ (base , rand) [%age]
rndlevs

where name is the level name, bonesmarker is a letter for
marking bones files, (base , rand) is the location, %age
is the generation percentage, as above, and rndlevs is the
number of similar levels available to choose from.

CHAINLEVEL: name bonesmarker prev_name + (base , rand) [
%age]

where name is the level name, bonesmarker is a letter for
marking bones files, prev_name is the name of a level
defined previously, (base , rand) is the offset from the
level being chained from, and %age is the generation percen-
tage.

RNDCHAINLEVEL: name bonesmarker prev_name + (base , rand)
[%age] rndlevs

where name is the level name, bonesmarker is a letter for
marking bones files, prev_name is the name of a level
defined previously, (base , rand) is the offset from the
level being chained from, %age is the generation percentage,
and rndlevs is the number of similar levels available to
choose from.

LEVELDESC: type

where type is the level type, (see DESCRIPTION, above). The
type is used to override any pre-set value used to describe
the entire dungeon, for this level only.

BRANCH: name @ (base , rand) [stair | no_up | no_down |
portal] [up | down]

where name is the name of the dungeon to branch to, and (
base , rand) is the location of the branch. The last two
optional arguments are the branch type and branch direction.
The type of a branch can be a two-way stair connection, a
one-way stair connection, or a magic portal. A one-way
stair is described by the types no_up and no_down which
specify which stair direction is missing. The default
branch type is stair. The direction for a stair can be
either up or down; direction is not applicable to portals.
The default direction is down.

CHAINBRANCH: name prev_name + (base , rand) [stair |
no_up | no_down | portal] [up | down]

where name is the name of the dungeon to branch to,
prev_name is the name of a previously defined level and (
base , rand) is the offset from the level being chained
from. The optional branch type and direction are the same
as described above.

GENERIC RULES
    Each dungeon must have a unique bonesmarker , and each spe-
    cial level must have a bonesmarker unique within its dungeon
    (letters may be reused in different dungeons). If the
    bonesmarker has the special value "none", no bones files
    will be created for that level or dungeon.

    The value base may be in the range of 1 to MAXLEVEL (as
    defined in global.h).

The value rand may be in the range of -1 to MAXLEVEL.

If rand is -1 it will be replaced with the value
(num_dunlevs(dungeon) - base) during the load process (ie.
from here to the end of the dungeon).

If rand is 0 the level is located absolutely at base.

Branches don't have a probability. Dungeons do. If a
dungeon fails to be generated during load, all its levels
and branches are skipped.

No level or branch may be chained from a level with a per-
centage generation probability. This is to prevent non-
resolution during the load. In addition, no branch may be
made from a dungeon with a percentage generation probability
for the same reason.

As a general rule using the dungeon compiler:

If a dungeon has a protofile name associated with it (eg.
tower) that file will be used.

If a special level is present, it will override the above
rule and the appropriate file will be loaded.

If neither of the above are present, the standard generator
will take over and make a "normal" level.

A level alignment, if present, will override the alignment
of the dungeon that it exists within.

EXAMPLE
    Here is the current syntax of the dungeon compiler's
    "language":

    #
    #   The dungeon description file for the "standard" original
    #   3.0 NetHack.

```
#
DUNGEON:     "The Dungeons of Doom" "D" (25, 5)
LEVEL:       "rogue" "none" @ (15, 4)
LEVEL:       "oracle" "none" @ (5, 7)
LEVEL:       "bigroom" "B" @ (12, 3) 15
LEVEL:       "medusa" "none" @ (20, 5)
CHAINLEVEL:  "castle" "medusa" + (1, 4)
CHAINBRANCH: "Hell" "castle" + (0, 0) no_down
BRANCH:      "The Astral Plane" @ (1, 0) no_down up

DUNGEON:     "Hell" "H" (25, 5)
DESCRIPTION: mazelike
DESCRIPTION: hellish
BRANCH:      "Vlad's Tower" @ (13, 5) up
LEVEL:       "wizard" "none" @ (15, 10)
LEVEL:       "fakewiz" "A" @ (5, 5)
LEVEL:       "fakewiz" "B" @ (10, 5)
LEVEL:       "fakewiz" "C" @ (15, 5)
LEVEL:       "fakewiz" "D" @ (20, 5)
LEVEL:       "fakewiz" "E" @ (25, 5)

DUNGEON:     "Vlad's Tower" "T" (3, 0)
PROTOFILE:   "tower"
DESCRIPTION: mazelike
ENTRY:       -1

DUNGEON:     "The Astral Plane" "A" (1, 0)
DESCRIPTION: mazelike
PROTOFILE:   "endgame"

NOTES:
Lines beginning with '#' are considered comments.
A special level must be explicitly aligned.  The alignment
of the dungeon it is in only applies to non-special levels
within that dungeon.

AUTHOR
  M. Stephenson (from the level compiler by Jean-Christophe
  Collet).
```

```
SEE ALSO
    lev_comp(6), nethack(6)

BUGS
    Probably infinite.

Dec            Last change: 12              5
```

7.5   Nethack special levels compiler man page

```
LEV_COMP(6)            1996            LEV_COMP(6)



NAME
    lev_comp - NetHack special levels compiler

SYNOPSIS
    lev_comp [ -w ] [ files ]

    If no arguments are given, it reads standard input.

DESCRIPTION
    Lev_comp is a special level compiler for NetHack version 3.2
    and higher.  It takes description files as arguments and
    produces level files that can be loaded by NetHack at run-
    time.

    The purpose of this tool is to provide NetHack administra-
    tors and implementors with a convenient way for adding spe-
    cial levels to the game, or modifying existing ones, without
    having to recompile the entire world.

    The -w option causes lev_comp to perform extra checks on the
    level and display extra warnings, however these warnings are
    sometimes superfluous, so they are not normally displayed.


GRAMMAR
```

```
file      : /* nothing */
        | levels
        ;

levels    : level
        | level levels
        ;

level     : maze_level
        | room_level
        ;

maze_level    : maze_def flags lev_init messages regions
        ;

room_level    : level_def flags lev_init messages rreg_init rooms corridors_def
        ;

level_def     : LEVEL_ID ':' string
        ;

lev_init      : /* nothing */
        | LEV_INIT_ID ':' CHAR ',' CHAR ',' BOOLEAN ',' BOOLEAN ',' light_state ','
        ;

walled        : BOOLEAN
        | RANDOM_TYPE
        ;

flags     : /* nothing */
        | FLAGS_ID ':' flag_list
        ;

flag_list     : FLAG_TYPE ',' flag_list
        | FLAG_TYPE
        ;

messages      : /* nothing */
        | message messages
        ;
```

```
message     : MESSAGE_ID ':' STRING
        ;

rreg_init   : /* nothing */
        | rreg_init init_rreg
        ;

init_rreg   : RANDOM_OBJECTS_ID ':' object_list
        | RANDOM_MONSTERS_ID ':' monster_list
        ;

rooms       : /* Nothing - dummy room for use with INIT_MAP */
        | roomlist
        ;

roomlist    : aroom
        | aroom roomlist
        ;

corridors_def  : random_corridors
        | corridors
        ;

random_corridors: RAND_CORRIDOR_ID
        ;

corridors   : /* nothing */
        | corridors corridor
        ;

corridor    : CORRIDOR_ID ':' corr_spec ',' corr_spec
        | CORRIDOR_ID ':' corr_spec ',' INTEGER
        ;

corr_spec   : '(' INTEGER ',' DIRECTION ',' door_pos ')'
        ;

aroom       : room_def room_details
        | subroom_def room_details
```

```
                ;

subroom_def     : SUBROOM_ID ':' room_type ',' light_state ',' subroom_pos ',' room_s
                ;

room_def        : ROOM_ID ':' room_type ',' light_state ',' room_pos ',' room_align ','
                ;

roomfill        : /* nothing */
                | ',' BOOLEAN
                ;

room_pos        : '(' INTEGER ',' INTEGER ')'
                | RANDOM_TYPE
                ;

subroom_pos     : '(' INTEGER ',' INTEGER ')'
                | RANDOM_TYPE
                ;

room_align      : '(' h_justif ',' v_justif ')'
                | RANDOM_TYPE
                ;

room_size       : '(' INTEGER ',' INTEGER ')'
                | RANDOM_TYPE
                ;

room_details    : /* nothing */
                | room_details room_detail
                ;

room_detail     : room_name
                | room_chance
                | room_door
                | monster_detail
                | object_detail
                | trap_detail
                | altar_detail
                | fountain_detail
```

```
          | sink_detail
          | pool_detail
          | gold_detail
          | engraving_detail
          | stair_detail
          ;

room_name     : NAME_ID ':' string
          ;

room_chance   : CHANCE_ID ':' INTEGER
          ;

room_door     : DOOR_ID ':' secret ',' door_state ',' door_wall ',' door_pos
          ;

secret        : BOOLEAN
          | RANDOM_TYPE
          ;

door_wall     : DIRECTION
          | RANDOM_TYPE
          ;

door_pos      : INTEGER
          | RANDOM_TYPE
          ;

maze_def      : MAZE_ID ':' string ',' filling
          ;

filling       : CHAR
          | RANDOM_TYPE
          ;

regions       : aregion
          | aregion regions
          ;

aregion       : map_definition reg_init map_details
```

```
        ;

map_definition : NOMAP_ID
        | map_geometry MAP_ID
        ;

map_geometry  : GEOMETRY_ID ':' h_justif ',' v_justif
        ;

h_justif    : LEFT_OR_RIGHT
        | CENTER
        ;

v_justif    : TOP_OR_BOT
        | CENTER
        ;

reg_init    : /* nothing */
        | reg_init init_reg
        ;

init_reg    : RANDOM_OBJECTS_ID ':' object_list
        | RANDOM_PLACES_ID ':' place_list
        | RANDOM_MONSTERS_ID ':' monster_list
        ;

object_list   : object
        | object ',' object_list
        ;

monster_list  : monster
        | monster ',' monster_list
        ;

place_list    : place
        | place ',' place_list
        ;

map_details   : /* nothing */
        | map_details map_detail
```

```
          ;

map_detail    : monster_detail
          | object_detail
          | door_detail
          | trap_detail
          | drawbridge_detail
          | region_detail
          | stair_region
          | portal_region
          | teleprt_region
          | branch_region
          | altar_detail
          | fountain_detail
          | mazewalk_detail
          | wallify_detail
          | ladder_detail
          | stair_detail
          | gold_detail
          | engraving_detail
          | diggable_detail
          | passwall_detail
          ;

monster_detail : MONSTER_ID chance ':' monster_c ',' m_name ',' coordinate
          monster_infos
          ;

monster_infos  : /* nothing */
          | monster_infos monster_info
          ;

monster_info  : ',' string
          | ',' MON_ATTITUDE
          | ',' MON_ALERTNESS
          | ',' alignment
          | ',' MON_APPEARANCE string
          ;

object_detail  : OBJECT_ID object_desc
```

```
          | COBJECT_ID object_desc
          ;

object_desc    : chance ':' object_c ',' o_name ',' object_where object_infos
          ;

object_where   : coordinate
          | CONTAINED
          ;

object_infos   : /* nothing */
          | ',' curse_state ',' monster_id ',' enchantment optional_name
          | ',' curse_state ',' enchantment optional_name
          | ',' monster_id ',' enchantment optional_name
          ;

curse_state    : RANDOM_TYPE
          | CURSE_TYPE
          ;

monster_id     : STRING
          ;

enchantment    : RANDOM_TYPE
          | INTEGER
          ;

optional_name  : /* nothing */
          | ',' NONE
          | ',' STRING
          ;

door_detail    : DOOR_ID ':' door_state ',' coordinate
          ;

trap_detail    : TRAP_ID chance ':' trap_name ',' coordinate
          ;

drawbridge_detail: DRAWBRIDGE_ID ':' coordinate ',' DIRECTION ',' door_state
          ;
```

```
mazewalk_detail : MAZEWALK_ID ':' coordinate ',' DIRECTION
        ;

wallify_detail : WALLIFY_ID
        ;

ladder_detail  : LADDER_ID ':' coordinate ',' UP_OR_DOWN
        ;

stair_detail   : STAIR_ID ':' coordinate ',' UP_OR_DOWN
        ;

stair_region   : STAIR_ID ':' lev_region ',' lev_region ',' UP_OR_DOWN
        ;

portal_region   : PORTAL_ID ':' lev_region ',' lev_region ',' string
        ;

teleprt_region : TELEPRT_ID ':' lev_region ',' lev_region teleprt_detail
        ;

branch_region   : BRANCH_ID ':' lev_region ',' lev_region
        ;

teleprt_detail : /* empty */
        | ',' UP_OR_DOWN
        ;

lev_region    : region
        | LEV '(' INTEGER ',' INTEGER ',' INTEGER ',' INTEGER ')'
        ;

fountain_detail : FOUNTAIN_ID ':' coordinate
        ;

sink_detail : SINK_ID ':' coordinate
        ;

pool_detail : POOL_ID ':' coordinate
```

```
          ;

diggable_detail : NON_DIGGABLE_ID ':' region
          ;

passwall_detail : NON_PASSWALL_ID ':' region
          ;

region_detail  : REGION_ID ':' region ',' light_state ',' room_type prefilled
          ;

altar_detail  : ALTAR_ID ':' coordinate ',' alignment ',' altar_type
          ;

gold_detail   : GOLD_ID ':' amount ',' coordinate
          ;

engraving_detail: ENGRAVING_ID ':' coordinate ',' engraving_type ',' string
          ;

monster_c     : monster
        | RANDOM_TYPE
        | m_register
        ;

object_c     : object
        | RANDOM_TYPE
        | o_register
        ;

m_name     : string
        | RANDOM_TYPE
        ;

o_name     : string
        | RANDOM_TYPE
        ;

trap_name     : string
        | RANDOM_TYPE
```

```
                ;

room_type     : string
        | RANDOM_TYPE
        ;

prefilled     : /* empty */
        | ',' FILLING
        | ',' FILLING ',' BOOLEAN
        ;

coordinate    : coord
        | p_register
        | RANDOM_TYPE
        ;

door_state    : DOOR_STATE
        | RANDOM_TYPE
        ;

light_state   : LIGHT_STATE
        | RANDOM_TYPE
        ;

alignment     : ALIGNMENT
        | a_register
        | RANDOM_TYPE
        ;

altar_type    : ALTAR_TYPE
        | RANDOM_TYPE
        ;

p_register    : P_REGISTER '[' INTEGER ']'
        ;

o_register    : O_REGISTER '[' INTEGER ']'
        ;

m_register    : M_REGISTER '[' INTEGER ']'
```

```
              ;

a_register   : A_REGISTER '[' INTEGER ']'
        ;

place        : coord
        ;

monster      : CHAR
        ;

object       : CHAR
        ;

string       : STRING
        ;

amount       : INTEGER
        | RANDOM_TYPE
        ;

chance       : /* empty */
        | PERCENT
        ;

engraving_type : ENGRAVING_TYPE
        | RANDOM_TYPE
        ;

coord        : '(' INTEGER ',' INTEGER ')'
        ;

region       : '(' INTEGER ',' INTEGER ',' INTEGER ',' INTEGER ')'
        ;

NOTE:
Lines beginning with '#' are considered comments.

The contents of a "MAP" description of a maze is a rectangle
showing the exact level map that should be used for the
```

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given part of a maze. Each character in the map corresponds
to a location on the screen. Different location types are
denoted using different ASCII characters. The following
characters are recognized. To give an idea of how these are
used, see the EXAMPLE, below. The maximum size of a map is
normally 76 columns by 21 rows.

```
'-'   horizontal wall
'|'   vertical wall
'+'   a doorway (state is specified in a DOOR declaration)
'A'   open air
'B'   boundary room location (for bounding unwalled irregular regions)
'C'   cloudy air
'I'   ice
'S'   a secret door
'H'   a secret corridor
'{'   a fountain
'\'   a throne
'K'   a sink (if SINKS is defined, else a room location)
'}'   a part of a moat or other deep water
'P'   a pool
'L'   lava
'W'   water (yes, different from a pool)
'T'   a tree
'F'   iron bars
'#'   a corridor
'.'   a normal room location (unlit unless lit in a REGION declaration)
' '   stone
```

EXAMPLE
    Here is an example of a description file (a very simple
    one):

```
MAZE : "fortress", random
GEOMETRY : center , center
MAP
}}}}}}}}}
}}}|-|}}}
}}|-.-|}}
}|-...-|}
```

```
}|.....|}
}|-...-|}
}}|-.-|}}
}}}|-|}}}
}}}}}}}}}
ENDMAP
MONSTER: '@', "Wizard of Yendor", (4,4)
OBJECT: '"', "Amulet of Yendor", (4,4)
# a hell hound flanking the Wiz on a random side
RANDOM_PLACES: (4,3), (4,5), (3,4), (5,4)
MONSTER: 'd', "hell hound", place[0]
# a chest on another random side
OBJECT: '(', "chest", place[1]
# a sack on a random side, with a diamond and maybe a ruby in it
CONTAINER: '(', "sack", place[2]
OBJECT: '*', "diamond", contained
OBJECT[50%]: '*', "ruby", contained
# a random dragon somewhere
MONSTER: 'D', random, random
# 3 out of 4 chance for a random trap in the EAST end
TRAP[75%]: random, (6,4)
# an electric eel below the SOUTH end
MONSTER: ';', "electric eel", (4,8)
# make the walls non-diggable
NON_DIGGABLE: (0,0,8,8)
TELEPORT_REGION: levregion(0,0,79,20), (0,0,8,8)
```

This example will produce a file named "fortress" that can
be integrated into one of the numerous mazes of the game.

Note especially the final, TELEPORT_REGION specification.
This says that level teleports or other non-stairway
arrivals on this level can land anywhere on the level except
the area of the map. This shows the use of the ''levre-
gion'' prefix allowed in certain region specifications.
Normally, regions apply only to the most recent MAP specifi-
cation, but when prefixed with ''levregion'', one can refer
to any area of the level, regardless of the placement of the
current MAP in the level.

```
AUTHOR
    Jean-Christophe Collet, David Cohrs.

SEE ALSO
    dgn_comp(6), nethack(6)

BUGS
    Probably infinite. Most importantly, still needs additional
    bounds checking.

May            Last change: 16            11
```

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