# Understanding File Paths

In this activity you will:

* Learn about Linux file paths
* Be able to identify absolute and relative paths
* Be able to specify a path to a file

### Definitions:

**File:** a discrete logical entity used to store related data (e.g. spreadsheet, PDF or JPEG photo)

**Directory:** a file system construct to used to organise files.

### File Paths

A file path allows a program or user to uniquely locate a file on the disk. It’s a bit like giving someone detailed directions to get to their destination. Each directory leading to the file needs to be listed, separated by a forward slashes (/).

So a file called 'test' in the user Fred's home directory would be accessed via the path:

/home/fred/test

### Absolute and Relative Paths

**Absolute:** an absolute path defines the location of a file or directory from anywhere in the directory tree. This is defined from the root directory (or some other point that does not move) and is valid from any working directory on the system. Absolute paths start with a forward slash (/) or a tilda (~).

**Relative:** a relative file path is defined relative to your current location in the file system. This means it is only valid when in the current working directory. These paths do not start with a forward slash (/) or tilda (~).

**Changing directory:**

You can change the working directory using the cd command:

cd <directory to change to>

Example: cd /usr/bin

### Activity 1: File Path Identification

Label each of the following as an absolute or relative file path:

|  |  |
| --- | --- |
| **Path** | **Relative or absolute?** |
| /dev/sda1 | Absolute |
| Documents/Personal/MyCV.odt | Relative |
| ~/Videos/DancingCat.webm | Absolute |
| ./myscript | Relative |

### Up, down and here

Hiding in each directory (literally, it does not show in a normal directory listing!) are two very odd files. Look at the following out put:

steve@faraday:~/tmp$ ls -al

total 40

drwxr-xr-x 3 steve steve 4096 Jan 13 14:13 .

drwx------ 62 steve steve 28672 Jan 21 07:03 ..

drwxr-xr-x 3 steve steve 4096 Jan 13 14:07 hello

The two highlighted lines show a file called ‘.’ and one called ‘..’. Every directory has these.

* **.** means this directory. This is used when you want to run a program in the current location, we’ll come back to that later.
* **..** is a file linking you to the parent directory. So to move to the directory above you can use the following:

cd ..

To move up two directories

cd ../..

### Special Cases

**Home directories:** a user a has their home directory stored in /home/<username>. It is common for people to want to define a path within a home directory. Because of this, the tilda symbol (~) is used to represent the current user's home directory. This an absolute path.

Example: cat ~/Documents/cheese.txt

**Present working directory:** Another special case is that you may wish to run a program in your current directory. Normally, Linux will use the PATH variable to find the default location for a program (more on this in a later session!). To prevent this from happening you can wither enter the full path to the program, or if it is in your current directory, use: ./ (dot forward slash) This is a relative path.

Example: ./myprog

### Activity 2: Path Equivalents

The diagram below shows a directory tree for a Linux system. Use it to help answer the following questions.

**1**

**3**

**2**

**/**

**bin/**

**dev/**

**etc/**

**var/**

**root/**

**mnt/**

**boot/**

**home/**

**usr/**

**bin/**

**student/**

**upsydaisy/**

**log/**

**Example:** the absolute path to position 1 is: /var/log. To change to this we would use cd /var/log

1. Change directory to the location marked as ‘2’ using an absolute path.

|  |
| --- |
| cd /usr/bin |

1. Change directory to your home directory (you are a Telly Tubby…)

|  |
| --- |
| cd /home/upsydaisy |

1. Using an absolute path, view the file group a page at a time located at position ‘3’.

|  |
| --- |
| less /etc/group or more /etc/group |

1. Now do the same using a relative path from your home directory (hint: remember you can use ..):

|  |
| --- |
| less ../../etc/group or more ../../etc/group |