

## Assignment 2

Q1 :

```
~ via C v11.4.0-gcc took 6m27s  
> vi binary_search.c  
  
~ via C v11.4.0-gcc took 6m27s  
> gcc binary_search.c -o binary_search  
  
~ via C v11.4.0-gcc  
> ./binary_search  
Element found at index: 3
```

```

#include <stdio.h>

// Function to perform binary search
int binary_search(int arr[], int size, int target) {
    int left = 0;
    int right = size - 1;

    while (left <= right) {
        int mid = left + (right - left) / 2; // Avoid overflow for large indices

        // Check if the target is at the mid index
        if (arr[mid] == target) {
            return mid;
        }
        // If the target is greater, ignore the left half
        else if (arr[mid] < target) {
            left = mid + 1;
        }
        // If the target is smaller, ignore the right half
        else {
            right = mid - 1;
        }
    }

    // Target not found
    return -1;
}

// Main function to test binary search
int main() {
    int arr[] = {2, 3, 4, 10, 40};
    int size = sizeof(arr) / sizeof(arr[0]);
    int target = 10;

```

```

    int result = binary_search(arr, size, target);
    if (result != -1) {
        printf("Element found at index: %d\n", result);
    } else {
        printf("Element not found in array.\n");
    }

    return 0;
}

```

```
~ via C v11.4.0-gcc took 58s
> vi binary_search.c

~ via C v11.4.0-gcc took 19h6m43s
> gcc binary_search.c -o binary_search

~ via C v11.4.0-gcc
> ./binary_search
Enter the element to search: 10
Element found at index 3
```

Q2.

```
~ via C v11.4.0-gcc
> sudo mv ./binary_search.c /usr/local/bin
[sudo] password for aliaa:
```

Na2na2a.

1.

```
~ took 18m1s
> cat /etc/shells
# /etc/shells: valid login shells
/bin/sh
/bin/bash
/usr/bin/bash
/bin/rbash
/usr/bin/rbash
/usr/bin/sh
/bin/dash
/usr/bin/dash
```

2.

```
~> env
SHELL=/bin/bash
SESSION_MANAGER=local/bittercup:@/tmp/.ICE-unix/1610,unix/bittercup:/tmp/.ICE-unix/1610
QT_ACCESSIBILITY=1
COLORTERM=truecolor
XDG_CONFIG_DIRS=/etc/xdg/xdg-ubuntu:/etc/xdg
SSH_AGENT_LAUNCHER=gnome-keyring
XDG_MENU_PREFIX=gnome-
GNOME_DESKTOP_SESSION_ID=this-is-deprecated
GTK_IM_MODULE=ibus
LC_ADDRESS=en_CA.UTF-8
GNOME_SHELL_SESSION_MODE=ubuntu
LC_NAME=en_CA.UTF-8
SSH_AUTH_SOCK=/run/user/1000/keyring/ssh
XMODIFIERS=@im=ibus
DESKTOP_SESSION=ubuntu
LC_MONETARY=en_CA.UTF-8
GTK_MODULES=gail:atk-bridge
PWD=/home/aliaa
LOGNAME=aliaa
XDG_SESSION_DESKTOP=ubuntu
XDG_SESSION_TYPE=x11
GPG_AGENT_INFO=/run/user/1000/gnupg/S.gpg-agent:0:1
SYSTEMD_EXEC_PID=1869
XAUTHORITY=/run/user/1000/gdm/Xauthority
WINDOWPATH=2
HOME=/home/aliaa
USERNAME=aliaa
LC_PAPER=en_CA.UTF-8
```

3.

```
~> echo $SHELL
/bin/bash

~> █
```

4.

```
~> echo \
:█
```

The backslash (\) is used as an escape character in the shell.

5.

```
~  
> alias PrintPath="echo \SPATH"  
~  
> PrintPath  
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin  
~  
> □
```