RIPHAH INTERNATIONAL UNIVERSITY, ISLAMABAD

Bachelors of Computer Science – 6th Semester

Subject: Operating System

Submitted by: Ammara tahir – 41345

QUESTION 1

```
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p books/math/trigonometry
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p books/math/calculus
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p books/physics/quantum
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p books/physics/classical
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p books/physics/nuclear
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p books/computer
ammara@ammara-HP-ProBook-430-G2:~$ sudo apt install tree
[sudo] password for ammara:
```

```
ammara@ammara-HP-ProBook-430-G2:~$ tree books
books
├── computer
│   └── nuclear
├── math
│   ├── calculus
│   └── trigonometry
└── physics
    ├── classical
    ├── nuclear
    └── quantum

9 directories, 0 files
```

QUESTION 2

pwd (Print Working Directory):

ls (List Directory Contents):

cd (Change Directory):

mkdir (Make Directory):

rm -r (Remove Directory and Its Contents):

cp (Copy Files/Directories):

mv (Move or Rename Files/Directories):

find (Search for Files/Directories):

touch (Create Empty File):

What is BASH?

BASH (Bourne Again SHell) is a program in Linux that lets you type and run commands to control the computer. It helps you move around folders, manage files, and run programs. You can also write scripts in BASH to automate tasks. It's like a more powerful version of the original command program used in older systems. When you open a terminal on Linux, you're likely using BASH.

QUESTION 3

```
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p D1
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p D1/D11 D1/D12 D1/D13 D1/D14
ammara@ammara-HP-ProBook-430-G2:~$ touch D1/D11/F1 D1/D11/F2 D1/D11/F3
ammara@ammara-HP-ProBook-430-G2:~$ touch D1/D12/F4
ammara@ammara-HP-ProBook-430-G2:~$ touch D1/D13/F5 D1/D13/F6
ammara@ammara-HP-ProBook-430-G2:~$ touch D1/D14/F7 D1/D14/F8 D1/D14/F9
ammara@ammara-HP-ProBook-430-G2:~$ tree D1
D1
├── D1
│   ├── D11
│   ├── D12
│   ├── D13
│   └── D14
├── D11
│   ├── F1
│   ├── F2
│   └── F3
├── D12
│   └── F4
├── D13
│   ├── F5
│   └── F6
└── D14
    ├── F7
    ├── F8
    └── F9

9 directories, 9 files
ammara@ammara-HP-ProBook-430-G2:~$ 
```

QUESTION : 4

```
ammara@ammara-HP-ProBook-430-G2:~$ mkdir -p D2
ammara@ammara-HP-ProBook-430-G2:~$  mkdir -p D2/D11 D2/D12 D2/D13 D2/D14
ammara@ammara-HP-ProBook-430-G2:~$ touch D2/D11/F1 D2/D11/F2
ammara@ammara-HP-ProBook-430-G2:~$ touch D2/D12/F3
ammara@ammara-HP-ProBook-430-G2:~$ touch D2/D13/F4
ammara@ammara-HP-ProBook-430-G2:~$ touch D2/D14/F5 D2/D14/F6
ammara@ammara-HP-ProBook-430-G2:~$ tree D2
D2
├── D11
│   ├── F1
│   └── F2
├── D12
│   └── F3
├── D13
│   └── F4
└── D14
    ├── F5
    └── F6

4 directories, 6 files
ammara@ammara-HP-ProBook-430-G2:~$ ▯
```

QUESTION : 5

1.Setting up the Necessary Libraries

To draw a circle on the screen using C++, we need a graphics library. One popular option is Simple DirectMedia Layer (SDL) . We'll use SDL2 because it's widely supported and flexible for 2D graphics.

2.Writing the C++ Code

Once you have the SDL2 library installed, you can write the C++ code to draw a circle.

3.Code

```
#include <SDL2/SDL.h>

#include <cmath>


// Function to draw a circle

void drawCircle(SDL_Renderer* renderer, int x_center, int y_center, int radius) {
```

```c
    for (int w = 0; w < radius * 2; w++) {

        for (int h = 0; h < radius * 2; h++) {

            int dx = radius - w; // horizontal offset

            int dy = radius - h; // vertical offset

            if ((dx*dx + dy*dy) <= (radius * radius)) {

                SDL_RenderDrawPoint(renderer, x_center + dx, y_center + dy);

            }

        }

    }

}


int main(int argc, char* argv[]) {

    // Initialize SDL

    if (SDL_Init(SDL_INIT_VIDEO) != 0) {

        return 1;

    }


    // Create a window

    SDL_Window* window = SDL_CreateWindow("Draw Circle", SDL_WINDOWPOS_CENTERED,
SDL_WINDOWPOS_CENTERED, 640, 480, 0);

    if (!window) {

        SDL_Quit();

        return 1;

    }


    // Create a renderer

    SDL_Renderer* renderer = SDL_CreateRenderer(window, -1, SDL_RENDERER_ACCELERATED);

    if (!renderer) {
```

```cpp
    SDL_DestroyWindow(window);

    SDL_Quit();

    return 1;

  }


    // Set the draw color (RGB) and draw a circle

    SDL_SetRenderDrawColor(renderer, 255, 255, 255, 255); // White color

    drawCircle(renderer, 320, 240, 100); // Draw a circle at (320, 240) with a radius of 100


    // Show the rendered content

    SDL_RenderPresent(renderer);


    // Keep the window open for 5 seconds

    SDL_Delay(5000);


    // Clean up

    SDL_DestroyRenderer(renderer);

    SDL_DestroyWindow(window);

    SDL_Quit();


    return 0;

}
```

4.Compiling the C++ Code

Save your code in a file named `draw_circle.cpp`.

- `sudo apt install libsdl2-dev`: Installs the SDL2 development library, which is required to handle graphics in C++.
- `g++ -o draw_circle draw_circle.cpp -lSDL2`: Compiles the C++ program and links it with the SDL2 library.

- `./draw_circle`: Executes the compiled program, which opens a window with a circle drawn in it.

Screen shot

```
ammara@ammara-HP-ProBook-430-G2:~$ sudo apt update
sudo apt install libsdl2-dev
[sudo] password for ammara:
Hit:1 https://dl.google.com/linux/chrome/deb stable InRelease
Hit:2 http://ci.archive.ubuntu.com/ubuntu jammy InRelease
Get:3 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:4 https://packages.microsoft.com/repos/code stable InRelease
Get:5 http://ci.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:6 http://ci.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:7 http://ci.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1,988 kB]
Get:8 http://ci.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [690 kB]
Fetched 2,935 kB in 6s (465 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
10 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
libsdl2-dev is already the newest version (2.0.20+dfsg-2ubuntu1.22.04.1).
The following packages were automatically installed and are no longer required:
  libboost-filesystem1.74.0 liborcus-0.17-0 liborcus-parser-0.17-0
  libreoffice-ogltrans
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 10 not upgraded.
ammara@ammara-HP-ProBook-430-G2:~$
sudo apt install libsdl2-dev
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
libsdl2-dev is already the newest version (2.0.20+dfsg-2ubuntu1.22.04.1).
The following packages were automatically installed and are no longer required:
  libboost-filesystem1.74.0 liborcus-0.17-0 liborcus-parser-0.17-0
  libreoffice-ogltrans
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 10 not upgraded.
ammara@ammara-HP-ProBook-430-G2:~$ nano draw_circle.cpp
ammara@ammara-HP-ProBook-430-G2:~$ g++ -o draw_circle draw_circle.cpp -lSDL2
ammara@ammara-HP-ProBook-430-G2:~$ ./draw_circle
```

Sep 8 10:37 PM

ammara@ammara-HP-ProBook-430-G2: ~

```
security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
/packages.microsoft.com/repos/code stable InRelease
ci.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
ci.archive.ubuntu.com/ubuntu jammy-backports InRelease
ci.archive.ubuntu.c
ci.archive.ubuntu.c
 kB in 6s (465 kB/s
ge lists... Done
endency tree... Done
 information... Don
can be upgraded. Run
age lists... Done
endency tree... Done
 information... Don
is already the newes
g packages were auto
ilesystem1.74.0 libo
e-ogltrans
t autoremove' to rem
0 newly installed, 0
a-HP-ProBook-430-G2:
tall libsdl2-dev
kage lists... Done
endency tree... Done
te information... Don
is already the newes
ng packages were auto
filesystem1.74.0 libo
ce-ogltrans
t autoremove' to rem
 0 newly installed, 0
ra-HP-ProBook-430-G2:
ra-HP-ProBook-430-G2:
ra-HP-ProBook-430-G2:~$ ./draw_circle
ra-HP-ProBook-430-G2:~$ ./draw_circle
ra-HP-ProBook-430-G2:~$ ./draw_circle
ra-HP-ProBook-430-G2:~$ ./draw_circle
```

Draw Circle — ✕