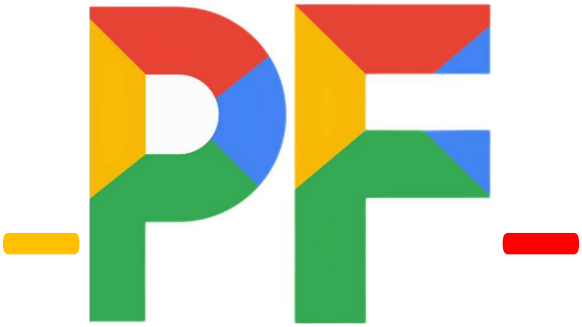


NATIONAL UNIVERSITY
of Computer & Emerging Sciences

Course: CL1002 – Programming Fundamentals.

Instructor: Sir Muhammad Usman.

Submitted by: Muhammad Rehan

Roll no. 22P-9106

Class: BSE-1A (Fall 2022)

Assignment no. 02

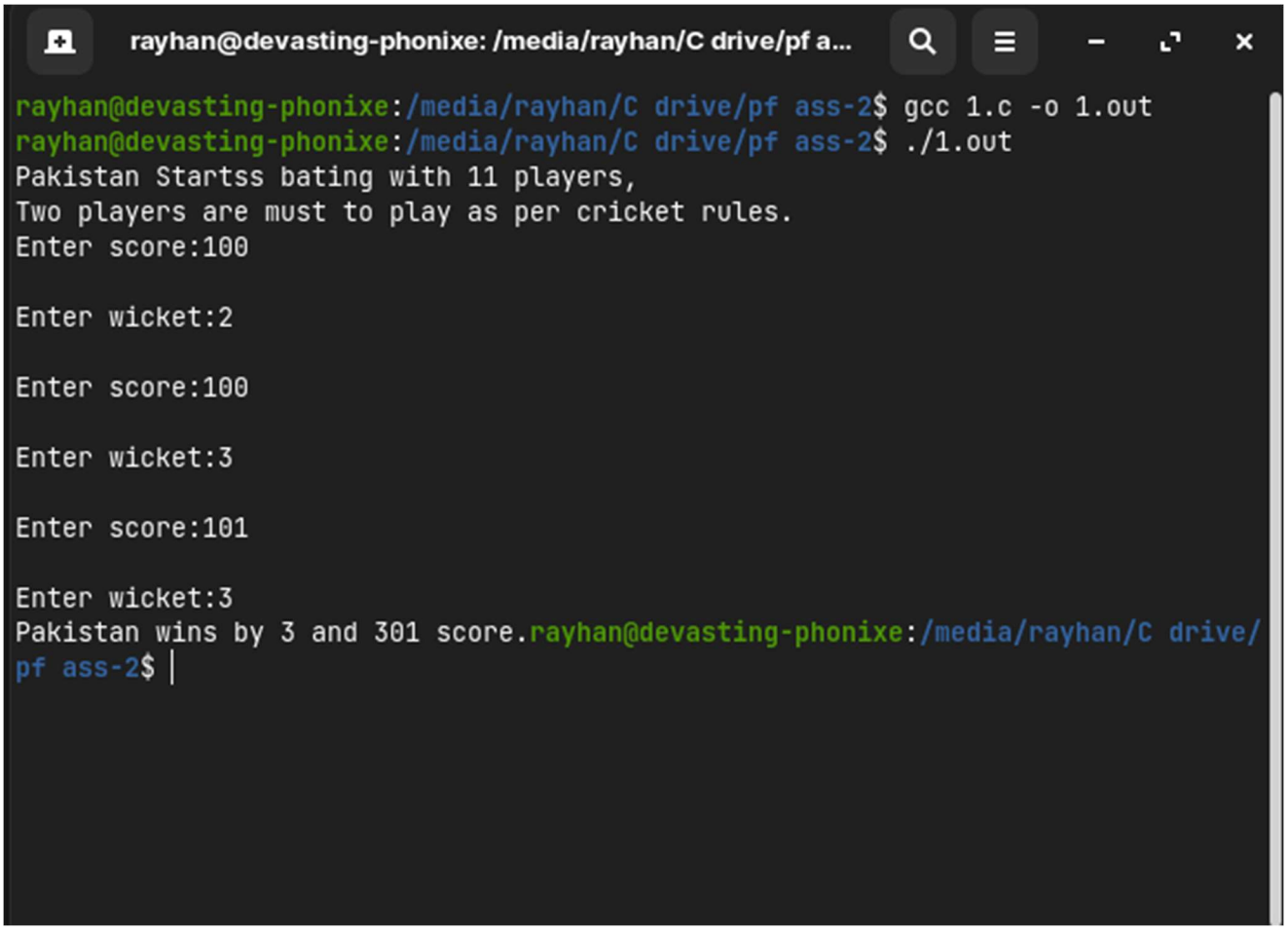
Date: November 20th, 2022.

Department of Computer Scienc

## Problem 01:

```c
#include <stdio.h>
void match(void);
// A Function which will Do all the stuff.
int main()
{
    match();
    // Calling Fucntion.
    return 0;
}
void match(void)
{
    int player_count = 11, score = 0;
    printf("Pakistan Startss bating with 11 players,\nTwo players are must to play as per cricket rules.");
    while (1)
    // A Forever Loop
    {
        if (score > 300 && player_count < 1)
        // Checking condition of match
        {
            break;
        }
        else
        {
            int current_score, wicket;
            printf("\nEnter score:");
            // Taking input.
            scanf("%d", &current_score);
            printf("\nEnter wicket:");
            // Taking input.
            scanf("%d", &wicket);
            score = score + current_score;
            // Updating the status of score
            player_count = player_count - wicket;
            // Updating the status of wickets
        }
    }
    printf("Pakistan wins by %d and %d score.", player_count, score);
}
```

## Screenshots:

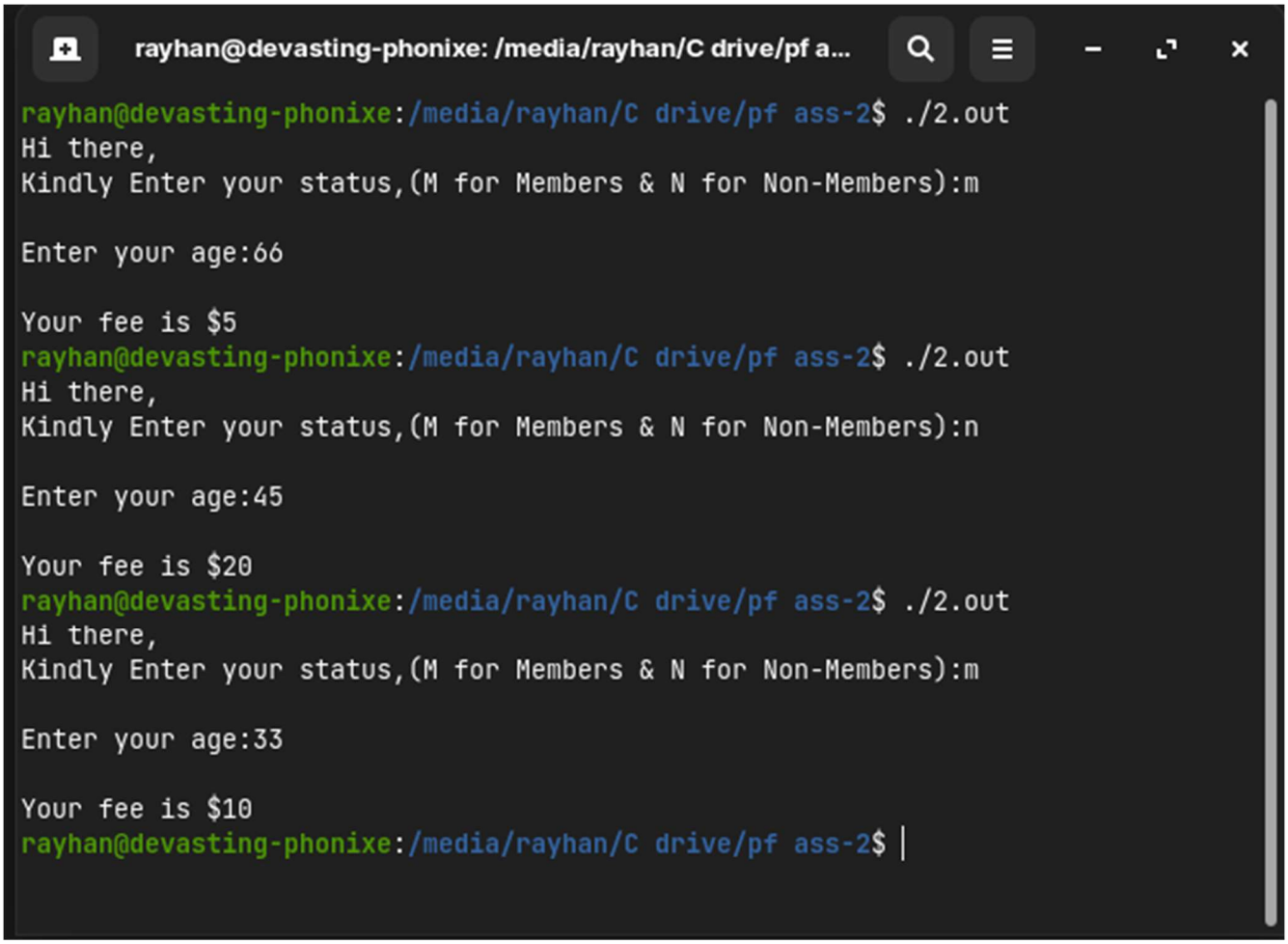



## Problem 02:

```c
#include <stdio.h>
#include <stdlib.h>
#define oldage 65
#define C_M_Y 10
#define C_M_O 5
#define N_M 20
// DEfining all the contants i will use in the program
int main()
{
    char memebership;
    int age;
    printf("Hi there,\nKindly Enter your status,(M for Members & N for Non-Members):");
    scanf("%c", &memebership);
    printf("\nEnter your age:");
    scanf("%d", &age);
    switch (memebership)
    // Using swtich to identify membership status.
    {
    case 'M':
        if (age < oldage)
        //Checking the condition for age.
        {
            printf("\nYour fee is $%d\n", C_M_Y);
        }
        if (age >= oldage)
```

```
        //Checking the condition for age.
        {
            printf("\nYour fee is $%d\n", C_M_O);
        }
        break;
    case 'm':
        if (age < oldage)
        //Checking the condition for age.
        {
            printf("\nYour fee is $%d\n", C_M_Y);
        }
        if (age >= oldage)
        //Checking the condition for age.
        {
            printf("\nYour fee is $%d\n", C_M_O);
        }
        break;
    case 'N':
        printf("\nYour fee is $%d\n", N_M);
        //If Non member then fee is same regardless of age.
        break;
    case 'n':
        printf("\nYour fee is $%d\n", N_M);
        //If Non member then fee is same regardless of age.
        break;
            default : printf("\nKindly enter a valid input for membership status.\n");
            //If user enter invalid character for membership status.
        break;
    }
}
```

Screenshot:




Problem 03:

```c
#include <stdio.h>
#include <math.h>
#include <stdlib.h>
// Inclduing Librabries
int main()
{
    // I experimented with int and float both but was getting the ouput nan.
    //Googled it and it came out i should use double.
    double a, b, c, disc;
    printf("\nEnter a:");
    scanf("%lf", &a);
    printf("Enter b:");
    scanf("%lf", &b);
    printf("Enter c:");
    scanf("%lf", &c);

    disc = (b * b) - (4 * a * c);
    //Calculing Disc

    if (disc > 0)
    //Checking the nature of disc
    {
        printf("The First Root is %.3lf",(-b + sqrt(disc)) / (2 * a));
        printf("\nThe Second Root is %.3lf\n",(-b - sqrt(disc)) / (2 * a));
    }
    if (disc == 0)
```

```c
    //Checking the nature of disc
    {
        printf("The First root is equal to the Second root = %.3lf;\n",-b / (2 * a));
    }
    if (disc < 0)
    //Checking the nature of disc
    {
        double real = -b / (2 * a);
        double imaginary = sqrt(-disc) / (2 * a);
        printf("The First Root is = %.1lf+%.1lfi", real, imaginary);
        printf("\nThe Second Root is = %.1lf-%.1lfi\n", real, imaginary);
        //Now i was failing here, tried everything but then i researched it on google and it came out that i should consule out the resutl like this. declaring two double and then calculating and displaiying them differently.
    }
    return 0;
}
```

Screenshot:

```
PS C:\pf ass-2> gcc 3.c -o 3.exe
PS C:\pf ass-2> .\3.exe

Enter a:1
Enter b:1
Enter c:1
The First Root is = -0.5+0.9i
The Second Root is = -0.5-0.9i
PS C:\pf ass-2>
```

Problem 04:

```c
#include <stdio.h>
int palindromic(int num);
int main()
{
    int num, count;
    int last;
    for (int i = 100; i <= 999; i++)
    {
        for (int j = 100; j <= 999; j++)
        {
            int n = i * j;
            last = palindromic(n);
        }
    }
    printf("%d", last);
    return 0;
}

int palindromic(int num)
{
```

```
    int last;
    int num_2 = num;
    int reverse = 0, rem;
    while (1)
    {
        if (num_2 == 0)
        {
            break;
        }
        else
        {
            rem = num_2 % 10;
            num_2 = num_2 / 10;
            reverse = reverse * 10 + rem;
        }
    }
    if (num == reverse)
    {
        last = num;
        return last;
    }
}
```

## Screenshot:


## Problem 05:

```
#include<stdio.h>
int main()
{
     int number, rem=0;
     printf("Enter number: ");
     scanf("%d", &number);

     for(int i=0;i < number; i++)
     {
      rem = rem+i;

      if(rem == number)
      {
       printf("%d is TRIANGULAR NUMBER.", number);
```

```
       break;
      }
     }

     if(number == i)
     {
      printf("%d is NOT TRIANGULAR NUMBER.", number);
     }
     return 0;
}
```

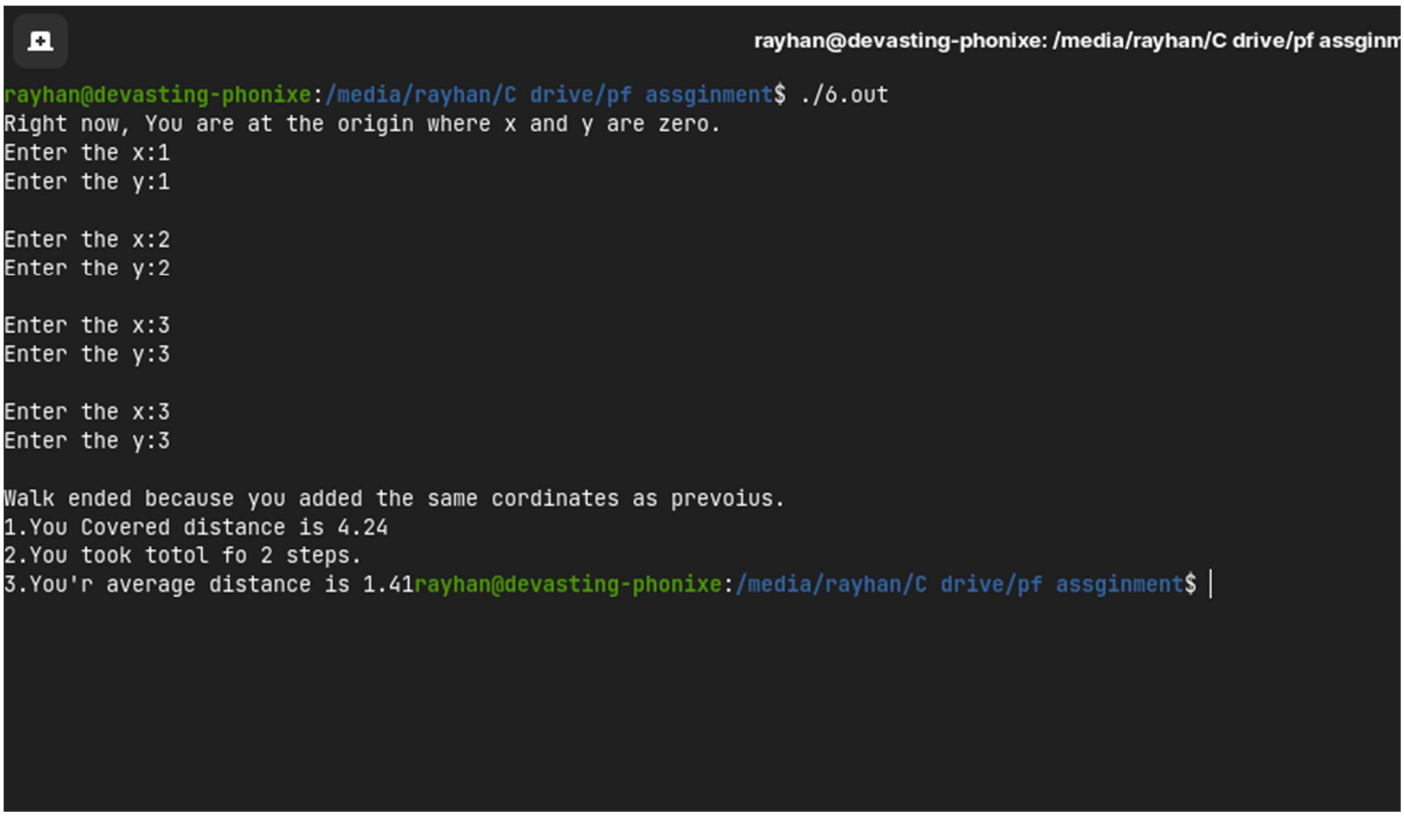
Screenshot:


Problem 06:

```c
#include <stdio.h>
#include <math.h>
//math library to use sqrt function.
void position(float current_x, float current_y, float next_x, float next_y);
//Fuction to calculate distance and steps
void operation();
//Function which will do all the operation
float distance_traveled;
// a Global varaible and i think global varaible are not a bad practice.
int main()
{
    operation();
    // Calling function
    return 0;
}
void operation(void)
{
    float next_x, next_y, current_x = 0, current_y = 0, count = 0;
    printf("Right now, You are at the origin where x and y are zero.");
    while (1)
    // Now this loop will keep asking input
    {
        printf("\nEnter the x:");
        scanf("%f", &next_x);
        printf("Enter the y:");
        scanf("%f", &next_y);
```

```
        if (current_x != next_x && current_x != next_y)
        // Conditon to check if cordinates are same as previous
        {
            position(current_x, current_y, next_x, next_y);
            count++;
            current_x = next_x;
            current_y = next_y;
        }
        else
        {
            // Breaking if condition is not meet.
            break;
        }
    }
    printf("\nWalk ended because you added the same cordinates as prevoius.");
    printf("\n1.You Covered distance is %.2f", distance_traveled);
    printf("\n2.You took totol fo %.0f steps.", count - 1);
    printf("\n3.You'r average distance is %.2f", distance_traveled / count);
    return;
}
void position(float current_x, float current_y, float next_x, float next_y)
{
    float Current_distance = sqrt((next_x - current_x) * (next_x - current_x) + (next_y -
current_y) * (next_y - current_y));
    distance_traveled = Current_distance + distance_traveled;
}
```

## Screenshot:




## Problem 07:

```
#include <stdio.h>
```

```c
int main()
{
    int n = 5;
    for (int i=1;i<=n;i++)
    {
        for(int j=0;j<i;j++)
        {
          printf("%d",i);
        }
        printf("\n");
    }
}

}
```

Screenshot: