Tutorial Week 2

IT1050 – Object Oriented Concepts   **Semester 1, 2023**

Objectives : Convert C programs to C++

Exercise 1 - Calculations

Convert the C program given below which converts a length given in cm to inches to a C++ program.

Please Note that the input command in C++ is std::cin. This is a representation of the Keyboard.

e.g.
float data1;
int data2;
scanf("%f", &data1); --> std::cin >> data1;
scanf("%d", &data2); --> std::cin >> data2;

You already know that printf() in C is std::cout in C++
e.g.
printf("Hello World") --> std::cout << "Hello World";

2.54cm = 1 inch

```c
#include <stdio.h>
void main(void)
{
    float cm, inches;
    printf("Enter a length in cm : ");
    scanf("%f",&cm);
    inches = cm / 2.54;
    printf("Length in inches is %f \n", inches);
}
```

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Exercise 2 - Selection

Convert the C program given below which calculates an employee's salary to a C++ program.

Input Type, Salary, otHours
Type = 1
OtRate = 1000
Type = 2
OtRate = 1500
Type = 3
OtRate = 1700

Please Note that the input command in C++ is std::cin. This is a representation of the Keyboard.

```c
#include <stdio.h>
void main(void)
{
    double salary, netSalary;
    int etype, otHrs, otRate;
    printf("Enter Employee Type : ");
    scanf("%d", &etype);
    printf("Enter Salary  : ");
    scanf("%f", &salary);
    printf("Enter OtHrs : ");
    scanf("%d", &otHrs);

    switch (etype) {
        case 1 :
            otRate = 1000;
            break;
        case 2 :
            otRate = 1500;
            break;
        default :
            otRate = 1700;
            break;
```

```
    }


    netSalary = salary + otHrs* otRate;
    printf("Net Salary is %f ", netSalary);
}
```

Exercise 3 - Repeatition

Convert the C program given below which calculates the Factorial of a number that you input from the keyboard to a C++ program.

Please Note that the input command in C++ is std::cin. This is a representation of the Keyboard.

```c
#include <stdio.h>
void main(void)
{
    int no;
    long fac;

    printf("Enter a Number : ");
    scanf("%d", &no);

    fac = 1;
    for (int r=no; r >= 1; r--) {
        fac = fac * r;
    }

    printf("Factorial of %d is %ld\n", no, fac);
}
```

Exercise 4 - Functions

Write a program to calculate the function called nCr which is defined as

```
nCr = n!/ r!(n−r)!
```

Where n! is the factorial of n.

Implement the functions
long Factorial(int no);
long nCr(int n, int r);

Do not modify the main function.

```cpp
#include <iostream>

long Factorial(int no);
long nCr(int n, int r);

int main() {
  int n, r;
  std::cout << "Enter a value for n ";
  std::cin >> n;
  std::cout << "Enter a value for r ";
  std::cin >> r;
  std::cout << "nCr = ";
  std::cout << nCr(n,r);
  std::cout << std::endl;
}
```