EC2010-COMPUTER PROGRAMMING

LAB-05

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REG NO. : 2022/E/065

DATE : 29 NOV 2023

QUESTION 01

Task 01

```cpp
// RENUJAN J.
// 2022/E/065
// EC2010
// Group: [B]
// Lab: [05]
// Program Description: [Student details]
// Certificate of Authenticity: (choose one from below)
// I certify that the code in the method function main of this project
// is entirely my own work.

#include <iostream>

using namespace std;

class Student{
public:
    int age;
private:
    string studentId, name;

public:
    void displayAge(){
        cout << "Age = " <<age<<endl;
    }
public:
    void displayname(string n){
        name = n;
        cout << "Name = " <<name<<endl;
    }
public:
    void displayid(string n, string id){
        name = n;
        studentId = id;
        cout << name <<"\'s Student ID = "<<studentId<<endl;
    }
};

int main()
{
    Student obj1;
    cout << "Enter your age: ";
    cin >> obj1.age;
    string nameinput;
    cout << "Enter your Name: ";
    cin >> nameinput;
    string idinput;
    cout << "Enter your StudentId: ";
    cin >> idinput;
    obj1.displayname(nameinput);
    obj1.displayid(nameinput,idinput);
    obj1.displayAge();

    return 0;
}
```

```
Enter your age: 21
Enter your Name: Renujan
Enter your StudentId: 2022/e/065
Name = Renujan
Renujan's Student ID = 2022/e/065
Age = 21

Process returned 0 (0x0)   execution time : 36.905 s
Press any key to continue.
```

Task 02

```cpp
// RENUJAN J.
// 2022/E/065
// EC2010
// Group: [B]
// Lab: [05]
// Program Description: [Employee details]
// Certificate of Authenticity: (choose one from below)
// I certify that the code in the method function main of this project
// is entirely my own work.

#include <iostream>
using namespace std;

class Employee {
private:
    double basicSalary;
    double allowance;
    double epfRate;
    double epf;
    double monthlySalary;

public:
    void get(double basicSalary, double allowance, double epfRate){
        this->basicSalary = basicSalary;
        this->allowance = allowance;
        this->epfRate = epfRate;
    }

    double calculateMonthlySalary() {
        monthlySalary = basicSalary + allowance;
        return monthlySalary;
    }

    double calculateEPF() {
        epf = basicSalary * (epfRate / 100);
        return epf;
    }

    double calculateEPFAfterYears(int years) {
        double epfAfterYears = 0;

        for (int i =1; i <= years; ++i) {
            epfAfterYears += epf * 12;
            epfAfterYears *= (1 + (epfRate / 100));
        }

        return epfAfterYears;
    }
};

int main()
{
    Employee empl;

    double basicSalary, allowance, epfRate;
    int years;

    cout << "Enter Basic Salary: ";
    cin >> basicSalary;

    cout << "Enter Allowance: ";
    cin >> allowance;

    cout << "Enter EPF Rate(%): ";
    cin >>epfRate;

    cout << "Enter Number of Years: ";
    cin >> years;

    empl.get(basicSalary, allowance, epfRate);

    cout << "Monthly Salary: " << empl.calculateMonthlySalary() <<endl;
    cout << "EPF Deduction: " << empl.calculateEPF() <<endl;
    cout << "EPF After " << years << " Years: " << empl.calculateEPFAfterYears(years) <<endl;

    return 0;

}
```

```
Enter Basic Salary: 50000
Enter Allowance: 10000
Enter EPF Rate(%): 5
Enter Number of Years: 2
Monthly Salary: 60000
EPF Deduction: 2500
EPF After 2 Years: 64575

Process returned 0 (0x0)   execution time : 125.266 s
Press any key to continue.
```

QUESTION 02

Start here | Q2.cpp

```cpp
// RENUJAN J.
// 2022/E/065
// EC2010
// Group: [B]
// Lab: [05]
// Program Description: [find Nth number in series(1,3,12,60,360.......)]
// Certificate of Authenticity: (choose one from below)
// I certify that the code in the method function main of this project
// is entirely my own work.

#include <iostream>
using namespace std;

// Iterative Approach
int NthTerm_Iterative_way (int n)
{
    int fact = 1;
    for (int i=1; i<=n; i++){
        fact = fact * i;
    }
    return fact*(n+1)/2;
}

// Iterative Approach
int fact(int N)
{
    if (N>1)
        return N*fact(N-1);
    else
        return 1;
}

int NthTerm_Recursive_way (int n)
{
    return fact(n)*(n+1)/2;
}

int main()
{
    int num;

    cout << "Enter the number: ";
    cin >> num;

    cout << num << "-th term in the series " << NthTerm_Iterative_way(num) << endl;
    cout << num << "-th term in the series " << NthTerm_Recursive_way(num) << endl;

    return 0;
}

```

```
Enter the number: 4
4-th term in the series 60
4-th term in the series 60

Process returned 0 (0x0)   execution time : 8.607 s
Press any key to continue.
```

QUESTION 03

```cpp
// RENUJAN J.
// 2022/E/065
// EC2010
// Group: [B]
// Lab: [05]
// Program Description: [The given string is a palindrome or not by
// using the recursive method.]
// Certificate of Authenticity: (choose one from below)
// I certify that the code in the method function main of this project
// is entirely my own work.

#include <iostream>
#include <string>
using namespace std;

string revString (string str)
{
    if (str.length() <= 1){
        return str;
    }
    return revString(str.substr(1)) + str[0];
}


int main()
{
    string name, reversed;
    cout << "Enter a string: ";
    cin >> name;

    reversed = revString(name);

    if (reversed==name)
        cout << name << " is a palindrome" << endl;
    else
        cout << name << " is not a palindrome" << endl;

    return 0;
}

```

```
Enter a string: MADAM
MADAM is a palindrome

Process returned 0 (0x0)   execution time : 4.021 s
Press any key to continue.
```