OBJECT ORIENTED PROGRAMMING
[CT-260]

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LAB : 1

HEADER FILE:

```
#include <iostream>
#include <math.h>
using namespace std;
void question1(){
   cout << "Calculate Marks and Percentage!!!"<<endl;
    int rollNo, marks[5], obtainedMarks = 0, totalMarks = 500;
    char sub_name[][5] = {"CAG", "DS", "LDST", "OOPs", "PS"};
    cout << "Enter Roll No.: ";
    cin >> rollNo;
    for (int i = 0; i < 5; i++) {
        cout << "Enter marks of " << sub_name[i] << ": ";
        cin >> marks[i];
        obtainedMarks += marks[i];
    }
    float percentage = ((float)obtainedMarks / (float)totalMarks) * 100;
    cout << "Your percentage " << percentage << "%." << endl << endl;

}

void question2(){
  cout << "Swap three Numbers!!!"<<endl;
   int nums[3];
     for(int i=0;i<3;i++){
        cout << "Enter Number " << i+1 << ": ";
        cin >> nums[i];
     }

      cout << endl << "Before Swapping" << endl;
       for(int i=0;i<3;i++){
        cout << "Number" << i+1 << ": " << nums[i] << endl;
     }

     nums[0] = nums[0] + nums[1];
     nums[1] = nums[0] - nums[1];
      nums[0] = nums[0] - nums[1];
     nums[1] = nums[1] + nums[2];
     nums[2] = nums[1] - nums[2];
      nums[1] = nums[1] - nums[2];

     cout << "After Swapping" << endl;
       for(int i=0;i<3;i++){
        cout << "Number" << i+1 << ": " << nums[i] << endl;
     }
```

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   cout << endl;
}
void question3(){
    float fahrenheit, celsius;
  cout << "Convertor (Fahrenhet to Celsius):-" << endl;
  cout << "Enter Temp in Fahrenheit:";
  cin>> fahrenheit;
  celsius = (fahrenheit-32) / 1.8;
    cout << "Temp in Celsius: " << celsius<<endl << endl;
}

void add_mat (int mat1[3][3], int mat2[3][3], int add[3][3]) {
    for(int i=0;i<3;i++)
        for(int j=0;j<3;j++)
        add[i][j] = mat1[i][j] + mat2[i][j];
}
void multi_mat(int mat1[3][3], int mat2[3][3], int multi[3][3]){
    for(int i=0;i<3;i++)
        for(int j=0;j<3;j++){
        multi[i][j] = 0;
          for(int k=0;k<3;k++)
          multi[i][j] += mat1[i][k] * mat2[k][j];
        }
}

void question4(){
 cout << "Addition and Multiplication of (3x3) Matrix !!!"<<endl;
 int mat1[3][3], mat2[3][3], add[3][3], multi[3][3];
    cout << "Enter Mat A: " << endl;
    for(int i=0;i<3;i++)
        for(int j=0;j<3;j++)
        cin >> mat1[i][j];
    cout << "Enter Mat B: " << endl;
    for(int i=0;i<3;i++)
        for(int j=0;j<3;j++)
        cin >> mat2[i][j];
    add_mat(mat1, mat2, add);
    multi_mat(mat1,mat2,multi);

    cout << "Addition of Two Matrices is :" << endl;
     for(int i=0;i<3;i++){
        for(int j=0;j<3;j++)
        cout << add[i][j] << " ";
       cout << endl;
```

```
    }

       cout << "Multiplication of Two Matrices is :" << endl;
    for(int i=0;i<3;i++){
       for(int j=0;j<3;j++)
       cout << multi[i][j] << " ";
      cout << endl;
    }

    cout<<endl;
}

void question5(){
    cout << "Calculate Surface Area and Volume of Sphere!!!"<<endl;
  float radius, volume, surfaceArea;
    cout<< "Enter Radius of the Sphere: ";
    cin >> radius;
    volume = (4/3) * 3.14159 * pow(radius, 3);
    surfaceArea =4* (3.142) * pow(radius, 2);
    cout<< "Volume of the Sphere: " << volume << endl;
    cout<< "Surface Area of the Sphere: " << surfaceArea << endl <<endl;
}

void withdrawal_Logic(long long *accountNumber,int *amount, int *balance,int
tax,float fee,char accountType){
 cout << "Enter your Account Number: ";
       cin>>*accountNumber;
       cout<< "Enter Amount to Withdraw: ";
       cin >> *amount;

       if(*amount <=*balance){
       if(*amount>100000){
         cout << "You Exceed Maximum Range of Withdrawal "<<endl;
       }else{
         *balance -= *amount;
        *balance -=  (accountType == 's' || accountType =='S') ? *amount *
fee:100;
        if(*amount > 50000){
          *balance -= *balance * (tax*1.0/100);
        }

         cout <<endl << "Account Number: " << *accountNumber << endl;
         cout << "Withdrawal Amount: " << *amount <<endl;
         cout << "Balance: " << *balance << endl;
       }
```

```
      }else{
        cout << "Insufficient Balance" << endl;
      }
}

void question6(){
  char accountType;
  int balance = 200000,amount=0;
  long long accountNumber =0;
   cout << "Bank Withdrawal System"<<endl;
   cout<<"Enter Account Type(S for Saving and C for Current): ";
   cin>> accountType;
   if(accountType == 'S' || accountType=='s'){
      withdrawal_Logic(&accountNumber,&amount,&balance,5,0.02,accountType);
   }else if(accountType== 'C' || accountType=='c'){
       withdrawal_Logic(&accountNumber,&amount,&balance,5,100,accountType);
   }else{
    cout << "Please Enter Valid Account Type"<<endl;
   }

   cout << endl;
}
```

CPP FILE:

```
#include <iostream>
#include"OOPS_WEEK1.h"
using namespace std;

int main(){
  question1();
  question2();
  question3();
  question4();
  question5();
  question6();
}
```

OUTPUT:

##QUESTION 1

Calculate Marks and Percentage!!!

Enter Roll No.: 183

Enter marks of CAG: 100

Enter marks of DS: 100

Enter marks of LDST: 100

Enter marks of OOPs: 100

Enter marks of PS: 100

Your percentage 100%.

##QUESTION 2

Swap three Numbers!!!

Enter Number 1: 5

Enter Number 2: 4

Enter Number 3: 2

Before Swapping

Number1: 5

Number2: 4

Number3: 2

After Swapping

Number1: 4

Number2: 2

Number3: 5

##QUESTION 3

Convertor (Fahrenhet to Celsius):-

Enter Temp in Fahrenheit:32

Temp in Celsius: 0

##QUESTION 4

Addition and Multiplication of (3x3) Matrix !!!

Enter Mat A:

1 2 3

4 5 6

7 8 9

Enter Mat B:

1 2 3

4 5 6

7 8 9

Addition of Two Matrices is :

2 4 6

8 10 12

14 16 18

Multiplication of Two Matrices is :

30 36 42

66 81 96

102 126 150

##QUESTION 5##

Calculate Surface Area and Volume of Sphere!!!

Enter Radius of the Sphere: 8.2

Volume of the Sphere: 1732.17

Surface Area of the Sphere: 845.072

##QUESTION 6

Bank Withdrawal System

Enter Account Type(S for Saving and C for Current): C

Enter your Account Number: 123456

Enter Amount to Withdraw: 5000

Account Number: 123456

Withdrawal Amount: 5000

Balance: 194900