

# **OOPS**

## **Assignment- 1**

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1. Write a program (WAP) to display "Hello World" on console display.

**SOLUTION:**

```
#include <iostream>
using namespace std;
int main() {
    cout << "Hello World";
    return 0;
}
```

**OUTPUT:**

Hello World

2. Write a program to input an integer, a decimal number, and a character, and display them.

**SOLUTION:**

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

```
int main() {  
    int a;  
    float b;  
    char c;  
  
    cout << "Input integer:" << endl;  
    cin >> a;  
  
    cout << "Input decimal:" << endl;  
    cin >> b;  
  
    cout << "Input character:" << endl;  
    cin >> c;  
  
    cout << "Integer:" << a << endl  
        << "Decimal:" << b << endl  
        << "Character:" << c;  
}
```

## **OUTPUT:**

Input integer:

5

Input decimal:

0.5

Input character:

K

Integer:5

Decimal:0.5

Character:K

**3. Write a program to add, subtract, multiply, and divide two numbers.**

**SOLUTION:**

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

int main() {
    int a, b;
    cout << "Enter two numbers: " << endl;
    cin >> a >> b;
    int add = a+b;
    int subtract = a-b;
    int multiply = a*b;
    float divide = (float)a / b;
    cout << "Add: " << add << endl;
    cout << "Subtract: " << subtract << endl;
    cout << "Multiply: " << multiply << endl;
    cout << "Divide: " << divide << endl;
    return 0;
}
```

**OUTPUT:**

Enter two numbers:

10 5

Add: 15

Subtract: 5

Multiply: 50

Divide: 2

**4. Write a C++ program that asks for a temperature in Celsius and displays it in Fahrenheit.**

(Formula:  $F = (9/5 \times C) + 32$ ).

**SOLUTION:**

```
#include <iostream>
using namespace std;
int main() {
    float c, f;
    cout << "Enter temperature in Celsius: " << endl;
    cin >> c;
    f = (9.0 / 5) * c + 32;
    cout << "Temperature in Fahrenheit: " << f << endl;
    return 0;
}
```

**OUTPUT:**

Enter temperature in Celsius:

25

Temperature in Fahrenheit: 77

**5. Write a program to format console output using \n, \t, \b, endl, and setw within cout statements.**

**SOLUTION:**

```
#include <iostream>
```

```
#include <iomanip>
using namespace std;
int main() {
    cout << "A\nB" << endl;
    cout << "A\tB" << endl;
    cout << "AB\bC" << endl;
    cout << setw(10) << "ab";
    return 0;
}
```

### **OUTPUT:**

A

B

A B

AC

ab

**6.** Write a program to utilize assignment operators += and -=.

### **SOLUTION:**

```
#include <iostream>
using namespace std;
int main() {
    int a = 14;
    a += 5;
    cout << a << endl;
    a -= 7;
```

```
cout << a;  
return 0;  
}
```

### **OUTPUT:**

19

12

**7. Write a program to swap two numbers using a bitwise operator.**

### **SOLUTION:**

```
#include <iostream>  
using namespace std;  
int main() {  
    int a, b;  
    cout << "Integers a and b are: "<< endl;  
    cin >> a >> b;  
    a = a ^ b;  
    b = a ^ b;  
    a = a ^ b;  
    cout << "a: " << a << endl << "b: " << b;  
    return 0;  
}
```

### **OUTPUT:**

Integers a and b are:

20 8

a: 8

b: 20

**8.** Write a program to calculate the library fine for late return of a book using the following rules:

For the first 5 days, the fine is 50 paise per day.

For 6–10 days, the fine is 1 rupee per day.

For more than 10 days, the fine is 5 rupees per day.

If the book is returned after 30 days, the membership is cancelled.

The program should accept the number of late days and display the fine or an appropriate message.

**SOLUTION:**

```
#include <iostream>
using namespace std;
int main() {
    int days;
    float fine = 0;
    cout << "Enter number of late days: ";
    cin >> days;
    if (days <= 5) {
        fine = days * 0.50;
    }
    cout << "Fine: Rs " << fine;
}
else if (days <= 10) {
```

```
fine = (5 * 0.50) + (days - 5) * 1;  
cout << "Fine: Rs " << fine;  
}  
  
else if (days <= 30) {  
    fine = (5 * 0.50) + (5 * 1) + (days - 10) * 5;  
    cout << "Fine: Rs " << fine;  
}  
  
else {  
    cout << "Membership cancelled due to late return.";  
}  
  
return 0;  
}
```

## **OUTPUT:**

Enter number of late days:

4

Fine: Rs 2

**9.** Write a program to perform arithmetic operations using a switch-case statement.

## **SOLUTION:**

```
#include <iostream>  
using namespace std;  
  
int main() {  
    int a, b;  
    char ch;
```

```
cout << "Enter two numbers and the operation (+, -, *, /): " << endl;
cin >> a >> b >> ch;
switch (ch) {
    case '+':
        cout << a + b;
        break;
    case '-':
        cout << a - b;
        break;
    case '*':
        cout << a * b;
        break;
    case '/':
        cout << (float)a / b;
        break;
    default:
        cout << "Invalid operation";
}
return 0;
}
```

## **OUTPUT:**

Enter two numbers and the operation (+, -, \*, /):

20 12 -

**10. Write a program to check whether a given number is even or odd using:**

- (a) if-else statement (b) conditional operator

**SOLUTION:**

(a)

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

int main() {
    int n;
    cout << "Enter number:" << endl;
    cin >> n;
    if (n % 2 == 0)
        cout << "Even";
    else
        cout << "Odd";
    return 0;
}
```

(b)

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

int main() {
    int n;
    cout << "Enter number: " << endl;
    cin >> n;
```

```
cout << (n % 2 == 0 ? "Even" : "Odd");  
return 0;  
}
```

## **OUTPUT:**

Enter number:

13

Odd

Enter number:

6

Even