Assignment-2

**1.Create a class Student with name and age. Use a to set name = "Unknown" and age = 0. Display the values.**

#include <iostream>

using namespace std;

class Student {

string name;

int age;

public:

Student() { name = "Unknown"; age = 0; }

void display() { cout << "Name: " << name << " Age: " << age << endl; }

};

int main() {

Student s;

s.display();

}

**2.Write a class Rectangle with length and breadth. Initialize them using a and calculate area.**

#include <iostream>

using namespace std;

class Rectangle {

int length, breadth;

public:

Rectangle(int l, int b) { length = l; breadth = b; }

int area() { return length \* breadth; }

};

int main() {

Rectangle r(5, 3);

cout << "Area = " << r.area() << endl;

}

**3. Make a class Box with three constructors:**

* **No arguments (set sides = 1)**
* **One argument (cube)**
* **Three arguments (length, width, height).**

#include <iostream>

using namespace std;

class Box {

int l, w, h;

public:

Box() { l=w=h=1; } // no arg

Box(int side) { l=w=h=side; } // cube

Box(int L, int W, int H) { l=L; w=W; h=H; } // 3 args

int volume() { return l\*w\*h; }

};

int main() {

Box b1, b2(4), b3(2,3,4);

cout << "Vol1=" << b1.volume() << " Vol2=" << b2.volume() << " Vol3=" << b3.volume() << endl;

}

**4. Define a class Book with title and price. Use a to copy values from one object to another.**

#include <iostream>

using namespace std;

class Book {

string title;

float price;

public:

Book(string t, float p) { title = t; price = p; }

Book(const Book &b) { title = b.title; price = b.price; } // Copy constructor

void display() { cout << "Title: " << title << " Price: " << price << endl; }

};

int main() {

Book b1("C++ Programming", 300);

Book b2 = b1; // Copy values

b1.display();

b2.display();

}

**5. Write a class Calculator with two numbers. Initialize them using a constructor. Add a function to calculate .**

#include <iostream>

using namespace std;

class Calculator {

int num1, num2; // data members

public

Calculator(int a, int b) {

num1 = a;

num2 = b;

}

int add() {

return num1 + num2;

}

int subtract() {

return num1 - num2;

}

int multiply() {

return num1 \* num2;

}

float divide() {

if (num2 != 0)

return (float)num1 / num2;

else {

cout << "Error! Division by zero." << endl;

return 0;

}

}

};

int main() {

Calculator calc(20, 10); // object creation with constructor

cout << "Addition: " << calc.add() << endl;

cout << "Subtraction: " << calc.subtract() << endl;

cout << "Multiplication: " << calc.multiply() << endl;

cout << "Division: " << calc.divide() << endl;

return 0;

}

**6. Write a class Calculator with two numbers. Initialize them using a constructor. Add a function to calculate .**

#include <iostream>

using namespace std;

class Calculator {

int num1, num2;

public:

// Constructor to initialize

Calculator(int a, int b) {

num1 = a;

num2 = b;

}

int calculate() {

return num1 + num2;

}

};

int main() {

Calculator c(10, 20); // create object with numbers

cout << "Sum = " << c.calculate() << endl;

return 0;

}

**7. Create a class Circle with radius. Initialize it in the constructor and calculate the .**

#include <iostream>

using namespace std;

class Circle {

float radius;

public:

Circle(float r) {

radius = r;

}

float area() {

return 3.14159 \* radius \* radius;

}

};

int main() {

Circle c(5); // Circle with radius 5

cout << "Area of Circle = " << c.area() << endl;

return 0;

}

**8. Create a class Car with attributes brand and price. Use a constructor to initialize them. Display details.**

#include <iostream>

using namespace std;

class Car {

string brand;

float price;

public:

// Constructor

Car(string b, float p) {

brand = b;

price = p;

}

void display() {

cout << "Car Brand: " << brand << endl;

cout << "Car Price: $" << price << endl;

}

};

int main() {

Car c1("Toyota", 15000.50);

c1.display();

Car c2("BMW", 45000.75);

c2.display();

return 0;

}

**9. Make a class Employee with name and salary. Use a constructor to set values and a function to display salary details.**

#include <iostream>

using namespace std;

class Employee {

string name;

float salary;

public:

Employee(string n, float s) {

name = n;

salary = s;

}

void display() {

cout << "Employee Name: " << name << endl;

cout << "Salary: $" << salary << endl;

}

};

int main() {

Employee e1("John", 35000.50);

e1.display();

Employee e2("Emma", 50000.75);

e2.display();

return 0;

}

**10. Create a class Student with rollNo and marks. Initialize each student using a constructor in an . Display all.**

#include <iostream>

#include <vector>

using namespace std;

class Student {

private:

int rollNo;

double marks;

public:

Student(int r, double m) : rollNo(r), marks(m) { }

void display() const {

cout << "Roll No: " << rollNo << ", Marks: " << marks << endl;

}

};

int main() {

vector<Student> students;

students.emplace\_back(1, 85.5);

students.emplace\_back(2, 92.0);

students.emplace\_back(3, 76.3);

cout << "All Students:" << endl;

for (const auto& student : students) {

student.display();

}

return 0;

}