**ASSIGNMENT 2**

**Shiva Gupta C# Assignment**

PROGRAM 1

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace employee

{

internal class Employee

{

string Name;

int Age;

decimal Salary;

public Employee(string name, int age, decimal salary)

{

Name = name;

Age = age;

Salary = salary;

}

public void DisplayDetails()

{

Console.WriteLine("Employee Name: " + Name);

Console.WriteLine("Employee Age: " + Age);

Console.WriteLine("Employee Salary: " + Salary);

}

static void Main(string[] args)

{

Employee e = new Employee("Payal", 21, 30000);

e.DisplayDetails();

Console.ReadKey();

}

}

}

PROGRAM 2

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace Bank\_account

{

internal class Bank\_account

{

int Account\_no;

string Account\_holder\_name;

double Balance;

public Bank\_account(int acc\_no, string acc\_name, double balance)

{

Account\_no = acc\_no;

Account\_holder\_name = acc\_name;

Balance = balance;

}

public void displayDetails()

{

Console.WriteLine("Account number: " + Account\_no);

Console.WriteLine("Acount holder name: " + Account\_holder\_name);

Console.WriteLine("Balance: " + Balance);

}

public void deposit(double amount) {

if(amount > 0)

{

Balance += amount;

Console.WriteLine("Deposit amount" + Balance);

}

else

{

Console.WriteLine("No deposite amount");

}

}

public void withdraw(double amount)

{

if(amount > 0 && amount <= Balance) {

Balance -= amount;

Console.WriteLine("Withdrawl amount: " + Balance);

}

else{

Console.WriteLine("Invalid amount");

}

}

static void Main(string[] args)

{

Bank\_account b = new Bank\_account(1801036721, "Payal", 2000);

b.displayDetails();

b.deposit(1000);

b.withdraw(2000);

Console.WriteLine("\nAfter perform certain operations");

b.displayDetails();

}

}

}

PROGRAM 3

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace MathHelper

{

static class MathHelper

{

public static double CalculateAverage(int[] numbers)

{

if (numbers == null || numbers.Length == 0)

{

Console.WriteLine("Array can't be null");

}

int sum = 0;

foreach (int number in numbers)

{

sum += number;

}

return (double)sum / numbers.Length;

}

static void Main(string[] args)

{

int size;

size = Convert.ToInt32(Console.ReadLine());

int[] Array = new int[size];

for(int i = 0; i < size; i++)

{

Console.WriteLine("Enter the elements {0}", i + 1);

Array[i] = Convert.ToInt32(Console.ReadLine());

}

double average = MathHelper.CalculateAverage(Array);

Console.WriteLine("Average: " + average);

Console.ReadKey();

}

}

}

PROGRAM 4

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace Logger

{

public static class Logger

{

public static void LogMessage(string message)

{

Console.WriteLine($"{DateTime.Now}: {message}");

}

}

internal class Program

{

static void Main(string[] args)

{

Logger.LogMessage("This is a log message.");

Logger.LogMessage("Another log message.");

Console.ReadKey();

}

}

}

PROGRAM 7

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace LAB\_ASSIGNMENTS\_2

{

abstract class Shape

{

public abstract double CalculateArea();

}

class Circle : Shape

{

public double Radius { get; set; }

public Circle(double radius)

{

Radius = radius;

}

public override double CalculateArea()

{

return Math.PI \* Radius \* Radius;

}

}

class Rectangle : Shape

{

public double Width { get; set; }

public double Height { get; set; }

public Rectangle(double width, double height)

{

Width = width;

Height = height;

}

public override double CalculateArea()

{

return Width \* Height;

}

}

internal class Program

{

static void Main(string[] args)

{

Circle circle = new Circle(5);

Console.WriteLine($"Circle Area: {circle.CalculateArea():F2}");

Rectangle rectangle = new Rectangle(4, 6);

Console.WriteLine($"Rectangle Area: {rectangle.CalculateArea():F2}");

Console.ReadKey();

}

}

}

PROGRAM 8

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace LAB\_ASSIGNMENTS\_2

{

abstract class Animal

{

public string Name { get; set; }

public int Age { get; set; }

public Animal(string name, int age)

{

Name = name;

Age = age;

}

// Abstract method for making a sound

public abstract void MakeSound();

}

class Dog : Animal

{

public string Breed { get; set; }

public Dog(string name, int age, string breed)

: base(name, age)

{

Breed = breed;

}

public override void MakeSound()

{

Console.WriteLine($"{Name} the {Breed} barks.");

}

public void Fetch()

{

Console.WriteLine($"{Name} fetches a ball.");

}

}

class Cat : Animal

{

public bool IsLazy { get; set; }

public Cat(string name, int age, bool isLazy)

: base(name, age)

{

IsLazy = isLazy;

}

public override void MakeSound()

{

Console.WriteLine($"{Name} the cat meows.");

}

public void Scratch()

{

Console.WriteLine($"{Name} the cat scratches the furniture.");

}

}

internal class Program

{

static void Main(string[] args)

{

Dog dog = new Dog("Buddy", 3, "Golden Retriever");

Cat cat = new Cat("Whiskers", 2, true);

Console.WriteLine($"{dog.Name} is {dog.Age} years old.");

dog.MakeSound();

dog.Fetch();

Console.WriteLine($"{cat.Name} is {cat.Age} years old.");

cat.MakeSound();

cat.Scratch();

Console.ReadKey();

}

}

}

PROGRAM 9

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace LAB\_ASSIGNMENTS\_2

{

class Vehicle

{

public void StartEngine()

{

Console.WriteLine("Engine started.");

}

public void StopEngine()

{

Console.WriteLine("Engine stopped.");

}

}

sealed class Car : Vehicle

{

public void Drive()

{

Console.WriteLine("Car is driving.");

}

}

internal class Program

{

static void Main(string[] args)

{

Car car = new Car();

car.StartEngine();

car.Drive();

car.StopEngine();

}

}

}

PROGRAM 10

using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace LAB\_ASSIGNMENTS\_2

{

class BankAccount1

{

public int AccountNumber { get; set; }

public double Balance { get; set; }

public BankAccount1(int accountNumber, double balance)

{

AccountNumber = accountNumber;

Balance = balance;

}

}

sealed class SavingsAccount : BankAccount1

{

public double InterestRate { get; set; }

public SavingsAccount(int accountNumber, double balance, double interestRate)

: base(accountNumber, balance)

{

InterestRate = interestRate;

}

public void CalculateInterest(int numberOfMonths)

{

double monthlyInterestRate = InterestRate / 12;

double interestEarned = Balance \* monthlyInterestRate \* numberOfMonths;

Balance += interestEarned;

Console.WriteLine($"Interest calculated for {numberOfMonths} months. New balance: ${Balance:F2}");

}

}

internal class Program

{

static void Main(string[] args)

{

Console.WriteLine("Enter Account Number: ");

int account = Convert.ToInt32( Console.ReadLine() );

Console.WriteLine("Enter Initial Balance: ");

double balance = Convert.ToDouble( Console.ReadLine() );

Console.WriteLine("Enter Interest Rate: ");

double rate = Convert.ToDouble( Console.ReadLine() );

SavingsAccount savingsAccount = new SavingsAccount(account,balance,rate);

// Calculate interest for 6 months

savingsAccount.CalculateInterest(6);

Console.ReadKey();

}

}

}