Lab sheet 01

1.Write a Console Application Program to calculate the area of a rectangle. Prompt the user to enter the length and width. Display the calculated area. (use a separate function calculate the area).

class Program

{

static void Main()

{

// Prompt the user to enter the length and width

Console.Write("Enter the length of the rectangle: ");

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

Console.Write("Enter the width of the rectangle: ");

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

// Calculate the area using a separate function

double area = CalculateArea(length, width);

// Display the calculated area

Console.WriteLine($"The area of the rectangle is: {area}");

Console.ReadLine(); // Keep the console window open

}

// Function to calculate the area of a rectangle

static double CalculateArea(double length, double width)

{

return length \* width;

}

}

2.Write a Console Application program to check if the given 10 number inputs are even or odd. Prompt the user to enter the numbers, and display whether it's even or odd.

class Program

{

static void Main()

{

Console.WriteLine("Enter 10 numbers:");

for (int i = 1; i <= 10; i++)

{

Console.Write($"Enter number {i}: ");

int number = Convert.ToInt32(Console

3.Write a Console Application program to calculate the sum of all numbers from 1 to a given positive integer. Prompt the user to enter a positive integer and display the sum. If the user inputs a negative value it should display “ERROR”.

class Program

{

static void Main()

{

Console.Write("Enter a positive integer: ");

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

if (userInput > 0)

{

int sum = CalculateSum(userInput);

Console.WriteLine($"The sum of all numbers from 1 to {userInput} is: {sum}");

}

else

{

Console.WriteLine("ERROR: Please enter a positive integer.");

}

}

static int CalculateSum(int n)

{

int sum = 0;

for (int i = 1; i <= n; i++)

{

sum += i;

}

return sum;

}

}

4.Write a Console Application program to print the first N terms of the Fibonacci series. Prompt the user to enter the value of N. (Use recursion)

class Program

{

static void Main()

{

Console.Write("Enter the value of N for Fibonacci series: ");

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

if (n > 0)

{

Console.WriteLine($"First {n} terms of Fibonacci series:");

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

{

Console.Write(Fibonacci(i) + " ");

}

}

else

{

Console.WriteLine("ERROR: Please enter a positive integer for N.");

}

}

static int Fibonacci(int n)

{

if (n <= 1)

{

return n;

}

else

{

return Fibonacci(n - 1) + Fibonacci(n - 2);

}

}

}

5.Write a Console Application program to display the multiplication table of a given number. Prompt the user to enter a number and display its multiplication table. (Use loops).

class Program

{

static void Main()

{

// Prompt user to enter a number

Console.Write("Enter a number: ");

// Read the input and convert it to an integer

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

// Display the multiplication table using a loop

Console.WriteLine($"Multiplication table for {number}:");

for (int i = 1; i <= 10; i++)

{

int result = number \* i;

Console.WriteLine($"{number} x {i} = {result}");

}

// Wait for user input before closing the console window

Console.WriteLine("\nPress any key to exit...");

Console.ReadKey();

}

}

6.Create a C# console application that prompts the user to input a student's name and their exam marks. Based on the provided marks, determine, and display the corresponding grade for the student. The grading scale is as follows:

If the marks are between 75 and 100 (inclusive), assign Grade A.

For marks between 60 and 74 (inclusive), assign Grade B.

For marks between 50 and 59 (inclusive), assign Grade C.

For marks between 40 and 49 (inclusive), assign Grade D.

If the marks are below 40, the student has failed.

Display the student's name along with their assigned grade at the end of the program.

Validate the user input so that when the user inputs a value higher than 100 and less than 0 it displays an error message.

class Program

{

static void Main()

{

// Prompt user to input student's name

Console.Write("Enter student's name: ");

string studentName = Console.ReadLine();

// Prompt user to input exam marks

Console.Write("Enter exam marks: ");

// Validate user input for marks

if (int.TryParse(Console.ReadLine(), out int marks))

{

// Check the range of marks and assign grade accordingly

string grade = GetGrade(marks);

// Display the student's name and assigned grade

Console.WriteLine($"\nStudent: {studentName}");

Console.WriteLine($"Grade: {grade}");

}

else

{

Console.WriteLine("Invalid input for marks. Please enter a valid numerical value.");

}

// Wait for user input before closing the console window

Console.WriteLine("\nPress any key to exit...");

Console.ReadKey();

}

static string GetGrade(int marks)

{

if (marks >= 75 && marks <= 100)

return "A";

else if (marks >= 60 && marks <= 74)

return "B";

else if (marks >= 50 && marks <= 59)

return "C";

else if (marks >= 40 && marks <= 49)

return "D";

else if (marks < 0 || marks > 100)

return "Error: Invalid input for marks";

else

return "Fail";

}

}

7.Write a Console Application program to simulate a basic ATM machine. Allow the user to check balance, deposit money, and withdraw money. Display appropriate messages based on user actions. (Create separate functions for individual operations.)

class ATM:

def \_\_init\_\_(self):

self.balance = 0

def display\_menu(self):

print("1. Check Balance")

print("2. Deposit Money")

print("3. Withdraw Money")

print("4. Exit")

def check\_balance(self):

print(f"Your balance is ${self.balance}")

def deposit\_money(self):

amount = float(input("Enter the amount to deposit: $"))

self.balance += amount

print(f"${amount} deposited successfully.")

self.check\_balance()

def withdraw\_money(self):

amount = float(input("Enter the amount to withdraw: $"))

if amount > self.balance:

print("Insufficient funds. Withdrawal canceled.")

else:

self.balance -= amount

print(f"${amount} withdrawn successfully.")

self.check\_balance()

def main():

atm = ATM()

while True:

atm.display\_menu()

choice = input("Enter your choice (1-4): ")

if choice == '1':

atm.check\_balance()

elif choice == '2':

atm.deposit\_money()

elif choice == '3':

atm.withdraw\_money()

elif choice == '4':

print("Exiting the ATM. Thank you!")

break

else:

print("Invalid choice. Please enter a valid option.")

if \_\_name\_\_ == "\_\_main\_\_":

main()