**LAB 2**

Q1.   Write a program that takes a student's score as input and outputs the corresponding grade based on the following scale:

A: 90-100

B: 80-89

C: 70-79

D: 60-69

F: 0-59

**Program:**

**package** Demo;

**import** java.util.Scanner;

**public** **class** GradingSystem {

**public** **static** **void** main(String[] args) {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.print("Enter the student's score: ");

**int** score = scanner.nextInt();

**char** grade = *calculateGrade*(score);

System.***out***.println("The student's grade is: " + grade);

scanner.close();

}

**public** **static** **char** calculateGrade(**int** score) {

**if** (score >= 90 && score <= 100) {

**return** 'A';

} **else** **if** (score >= 80 && score < 90) {

**return** 'B';

} **else** **if** (score >= 70 && score < 80) {

**return** 'C';

} **else** **if** (score >= 60 && score < 70) {

**return** 'D';

} **else** {

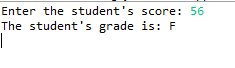
**return** 'F';

}

}

}

**Output:**

****

Q2.   Write a program to check if a given year is a leap year. (A year is a leap year if it is divisible by 4 but not by 100, or it is divisible by 400.)

**Program:**

**package** Demo;

**import** java.util.Scanner;

**public** **class** LeapYearCheck {

**public** **static** **void** main(String[] args) {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.print("Enter a year: ");

**int** year = scanner.nextInt();

**if** (*isLeapYear*(year)) {

System.***out***.println(year + " is a leap year.");

} **else** {

System.***out***.println(year + " is not a leap year.");

}

scanner.close();

}

**public** **static** **boolean** isLeapYear(**int** year) {

**if** (year % 4 == 0) {

**if** (year % 100 == 0) {

**if** (year % 400 == 0) {

**return** **true**;

} **else** {

**return** **false**;

}

} **else** {

**return** **true**;

}

} **else** {

**return** **false**;

}

}

}

**Output:**

Enter a year: 2047

2047 is not a leap year.

Q3.  Write a program that takes an integer as input and checks if it is positive, negative, or zero.

**Programe:**

**package** Demo;

**import** java.util.Scanner;

**public** **class** PositiveNegativeZero {

**public** **static** **void** main(String[] args) {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.print("Enter an integer: ");

**int** number = scanner.nextInt();

scanner.close();

**if** (number > 0) {

System.***out***.println(number + " is a positive number.");

} **else** **if** (number < 0) {

System.***out***.println(number + " is a negative number.");

} **else** {

System.***out***.println(number + " is zero.");

}

}

}

**Output:**

Enter an integer: 67

67 is a positive number.

Q4.Write a program that prints numbers from 1 to 10 using a loop.

**Programe:**

**package** Demo;

**public** **class** NumberLoop {

**public** **static** **void** main(String[] args) {

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

System.***out***.println(i);

}

}

}

Output:

1

2

3

4

5

6

7

8

9

10

Q5. Write a program that takes an integer N as input and calculates the sum of entered numbers.

Programe:

**package** Demo;

**import** java.util.Scanner;

**public** **class** CalculateSum {

**public** **static** **void** main(String[] args) {

Scanner sc = **new** Scanner(System.***in***);

**int** num; // Declare the number

System.***out***.println("Enter the number");

num = sc.nextInt(); // Initialize the number

sc.close();

**int** i = 1;

**int** sum = 0; // Variable to calculate the sum

**for** (i = 1; i <= num; i++) {

sum += i;

}

System.***out***.println("The sum of natural numbers is " + sum);

}

}

Output:

Enter the number

7

The sum of natural numbers is 28

Q6. Write a program that takes an integer as input and prints its multiplication table up to 10.

Programe:

**package** Demo;

**import** java.util.Scanner;

**public** **class** MultiplicationTable {

**public** **static** **void** main(String[] args) {

Scanner scanner = **new** Scanner(System.***in***);

System.***out***.print("Enter an integer: ");

**int** number = scanner.nextInt();

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

System.***out***.printf("%d \* %d = %d%n", number, i, number \*i);

scanner.close();

}

}

}

Output:

Enter an integer: 3

3 \* 1 = 3

3 \* 2 = 6

3 \* 3 = 9

3 \* 4 = 12

3 \* 5 = 15

3 \* 6 = 18

3 \* 7 = 21

3 \* 8 = 24

3 \* 9 = 27

3 \* 10 = 30

Q7.Write a program that takes a positive integer as input and prints its digits in reverse order.

Programe:

**package** Demo;

**import** java.util.Scanner;

**public** **class** DigitInReverse {

**public** **static** **void** main(String[] args) {

Scanner in = **new** Scanner(System.***in***);

System.***out***.print("Enter a positive integer: ");

**int** num = in.nextInt();

**int** reversedNum = 0;

**while** (num != 0) {

**int** digit = num % 10;

reversedNum = reversedNum \* 10 + digit;

num /= 10;

}

System.***out***.println("Reversed number: " + reversedNum);

in.close();

}

}

Output:

Enter a positive integer: 456

Reversed number: 654

Q8.Create a class Animal with a method makeSound() that prints "Some generic animal sound". Create another class Dog that extends Animal and overrides the makeSound() method to print "Bark". Write a main method to demonstrate calling the makeSound() method on an Animal reference holding a Dog object.

**Programe:**

**package** Demo;

// Animal.java

**public** **class** Animal {

**public** **void** makeSound() {

System.***out***.println("Some generic animal sound");

}

}

**package** Demo;

// Dog.java

**public** **class** Dog **extends** Animal {

@Override

**public** **void** makeSound() {

System.***out***.println("Bark");

}

}

**package** Demo;

//Main.java

**public** **class** Main {

**public** **static** **void** main(String[] args) {

Animal animal = **new** Dog(); // Animal reference holding a Dog object

animal.makeSound(); // Output: Bark

}

}

**Output:**

Bark