(1)Write a program to display the first 10 number of the series:

(a) 1, -3, 5, -7, 9….

public class Q1A

{

public static void main(String args[])

{

int x = 1;

for(int i=0;i<10;i++)

{

if(i%2!=0)

{

System.out.print('-');

}

System.out.print(x+" ");

x+=2;

}

}

}

(b) 2, 5,10, 17………

public class Q1A

{

public static void main(String args[])

{

int x = 1;

for(int i=0;i<10;i++)

{

if(i%2!=0)

{

System.out.print('-');

}

System.out.print(x+" ");

x+=2;

}

}

}

(c) 0, 1, 2, 3, 6, ……

public class Q1C

{

public static void main(String args[])

{

int a=0,b=1,c=2,d;

System.out.print(a+" ");

System.out.print(b+" ");

System.out.print(c+" ");

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

{

d=a+b+c;

System.out.print(d+" ");

a=b;

b=c;

c=d;

}

}

}

(d) 0, 3, 8, 15, ……

public class Q1D

{

public static void main(String args[])

{

int a=3;

int x=0;

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

{

System.out.print(x+" ");

x+=a;

a+=2;

}

}

}

(e) 1, 12, 121, 1234…….

public class Q1E

{

public static void main(String args[])

{

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

{

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

{

System.out.print(a);

}

System.out.print(" ");

}

}

}

(2) Write a program to enter two numbers and check whether they are Co-prime or not.

Sample Input:14,15

Sample Output: They are co-prime.

import java.util.\*;

public class Q2

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

System.out.println("Enter two numbers");

int a=obj.nextInt();

int b=obj.nextInt();

int dividend,divisor,r=0;

dividend=Math.max(a,b);

divisor=Math.min(a,b);

do

{

r=dividend%divisor;

if(r>0)

{

dividend=divisor;

divisor=r;

}

}

while(r>0);

if(divisor==1)

{

System.out.println("Co-prime numbers");

}

else

{

System.out.println("Not Co-prime numbers");

}

}

}

(3) Write a program to find the factors of a number including 1 and the number itself.

Sample Input: 18

Simple Output: I, 2, 3, 6, 9, 18

import java.util.\*;

public class Q3

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

System.out.println("Enter a number");

int n=obj.nextInt();

System.out.println("The Factors of the number are:");

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

{

if(n%i==0)

{

System.out.println(i);

}

}

}

}

(4) Write a program to accept a number and display the sum of its digits. Sample Input: 542

Sample Output: 5 + 4+ 2=11

import java.util.\*;

public class Q4

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

System.out.println("Enter a number");

int n=obj.nextInt();

int r,sum=0;

do

{

r=n%10;

sum=sum+r;

n=n/10;

}

while(n>0);

System.out.println(sum);

}

}

(5) Write a program to print the sum of negative numbers, sum of positive odd numbers and sum of positive even numbers from a list of numbers entered by the user. The list terminates when the user enters zero.

import java.util.\*;

public class Q5

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

int n;

int neg=0,pe=0,no=0;

do

{

System.out.println("Enter a number orzero to stop");

n=obj.nextInt();

if(n<0)

{

neg+=n;

}

if(n>0&&n%2==0)

{

pe+=n;

}

if(n<0&&n%2!=0)

{

no+=n;

}

}

while(n!=0);

System.out.println(neg);

System.out.println(pe);

System.out.println(no);

}

}

(6) Write a program to accept a number and display the new number after removing all zeros.

Sample input: 5400207

Sample Output: 5427

import java.util.\*;

public class Q6

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

System.out.println("Enter a number");

int n=obj.nextInt();

int res = 0;

int tens = 1;

int r;

do

{

r=n%10;

n=n/10;

if(r==0)

{

continue;

}

else

{

res = res+r\*tens;

}

tens \*=10;

}

while(n!=0);

System.out.println(res);

}

}

(7) Write a program to accept a number and check whether the number is present in the Fibonacci series or not. The program displays the message accordingly.

Sample Input: 55

Sample output: 55 is present in the Fibonacci series.

import java.util.\*;

public class Q7

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

System.out.println("Enter a number");

int n=obj.nextInt();

int a=0,b=1,c=0,f=0;

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

{

c=a+b;

a=b;

b=c;

if(n==a||n==b||n==c)

{

f=1;

break;

}

}

if(f==1)

{

System.out.println("The number is present in the Fibonacci series");

}

else

{

System.out.println("The number is not present in the Fibonacci series");

}

}

}

(8) Write a program to input a number. Display the product of the successors of even digits of the number entered by user.

Sample Input: 2745

Ans. The even digits are: 2 and 4

The product of successor of even digits is: 3\*5= 15

Output: 15

import java.util.\*;

public class Q8

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

System.out.println("Enter a number");

int n=obj.nextInt();

int r,ans=1;

do

{

r=n%10;

if(r%2==0)

{

ans=(r+1)\*ans;

}

n=n/10;

}

while(n>0);

System.out.println(ans);

}

}

(9) Write a program to input all two-digit numbers between 10 and 99 (both inclusive). The program displays only those numbers whose the units digit is twice the tens digit.

Sample Output: 12, 24, 36…...

import java.util.\*;

public class Q9

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

int d;

for(int i=10;i<=99;i++)

{

do

{

d=i%10;

if(d==2\*d)

{

System.out.println(d);

}

}

while(i>0);

}

}

}

(10)A prime number is said to be 'Twisted Prime', if the new number obtained after reversing the digits is also a prime number. Write a program to accept a number and check whether the number is 'Twisted Prime' or not.

Sample Input: 167

Sample Output: 761

167 is a 'Twisted Prime'.

import java.util.\*;

public class Q10

{

public static void main(String args[])

{

Scanner obj=new Scanner(System.in);

System.out.println("Enter a number");

int n=obj.nextInt();

int d,rev=0,cnt=0,c=0;

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

{

if(n%i==0)

{

cnt++;

}

}

if(cnt==2)

{

do

{

d=n%10;

rev=rev\*10+d;

n=n/10;

}

while(n>0);

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

{

if(rev%i==0)

{

c++;

}

}

if(c==2)

{

System.out.println("Twisted Prime number");

}

else

{

System.out.println("Not a Twisted Prime number");

}

}

else

{

System.out.println("Not a Prime number");

}

}

}

(11)A number is said to be Unique number if digits are not reapeated in it. Write a program to accept a number and check whether the number is Unique or not. The program displays the message accordingly.

Sample Input: 5463

Sample Output: It is a unique number.

Sample Input: 3272

Sample Output: It is not a unique number.

(12)A ‘Sum-product’ number is an integer that is equal to the sum of its digits times the product of its digits. Write a program to input a number and check whether it is a ‘Sum-product number’ or not. Display an appropriate message accordingly.

Sample Input: Enter a number: 123

Ans. 1+2+3=1\*2\*3

Sample Output: It is a Sum-product number.

(13) Write a program to input a number and check whether the number is a prime number or not.

[Hint: Twin prime numbers are the prime numbers whose difference is two. not. e.g.: (5, 7), (11, 13) …...

(15) A number is said to be Duck if the digit zero is (0) present in it. Write a program to accept a number and check whether the number is Duck or not. The program displays the message accordingly. (The number must not begin with zero)

Sample Input: 5063

Sample Output: It is a Duck number.

Sample Input: 7453

Sample Output: It is not a Duck number.

(16) Write a program in Java to find the sum of the given series:

(a) S = 9 + 99 + 8 +89+7+…… to n

(b) S = 1 + 1 + 2 + 3 + 5+…… to n terms

(c) S =2 - 4 + 6 - 8 +…… to

(d) S = (1\*2) + (2\*3) +…… +(19\*20)

(e) S = 1 + (1+2) + (1+2+3) +…… +(1+2+3…...+n)

(f) S = 1+ (1\*2) + 2 + (1\*2\*3) + 3 +…...+ 9 + (1\*2\*3\*……...10)

(g)S = 1! + 2! + 3! + 4! +….. to n terms

(h)S= +…… to n terms

(i) S=

(j) S=…… +

(17) Write a program in Java to find the sum of the given series:

(a) S=

(b) S=

(c) S=

(d) S=

(e) S=

(f) S=(a+1) + (a+2) + (a+3) +……. + (a + n)

(g) S=

(h) S=

(i) S=

(j) S=

(18) Write a program to display the following pattern:

(a)

1

3 1

5 3 1

7 5 3 1

9 7 5 3 1

(b)

1 2 3 4 5

6 7 8 9

10 11 12

13 14

15

(c)

15 14 13 12 11

10 9 8 7

6 5 4

3 2

1

(d)

1

1 0

1 0 1

1 0 1 0

1 0 1 0 1

(e)

1 2 3 4 5

2 2 3 4 5

3 3 3 4 5

4 4 4 4 5

5 5 5 5 5

(f)

1 3 5 7 9

3 5 7 9 1

5 7 9 1 3

7 9 1 3 5

9 1 3 5 7

(19) Write two separate programs to generate the following patterns using iteration (loop) statements:

(a)

\*

\* #

\* # \*

\* # \* #

\* # \* # \*

(b)

5 4 3 2 1

5 4 3 2

5 4 3

5 4

5

(20) A number of answer scripts with scores 0 to 99 awarded after marking are to be searched for finding:

(a) Number of answer scripts marked;

(b) Percentage of candidates getting 85 and above;

(c) Percentage of candidates getting 39 or less.

Write a Java program to take the scores as inputs and then output the three quantities required

(21) A game of throwing dice is played between two players in which each player throws a dice unless his score adds up to 20. A player is declared 'Winner' with the minimum number of throws. Write a program to perform the task given above.

(22) A class teacher wants to know the performance of the students of her class in Science (Physics, Chemistry, Biology). Write a program to accept marks in Physics, Chemistry and Biology of each student. Calculate the average and count how many of them have secured 90% or more (in average) in the class having 45 students.

(23) A 'circular prime' number is a prime number that is also prime after shifting the digit of the number to the end of the same number repeatedly.

Sample Input: 197

The numbers that are formed by shifting the first digit of the number in a circular order are: 197, 971 and 719. They are all prime numbers.

Sample Output: 197 is a 'Circular Prime' number.

Write a program to enter a number. Check and print whether it is a circular prime number or not

(24) A person enters the number of runs made on each ball by a batsman on a laptop by watching the cricket match in the stadium. If the runs made on a ball -1, it means the player is out. The computer then prints the total runs made by the player and the program continues for the next player. The process continues till all the batsmen are out. Finally, it prints the total number of runs scored by the team.

Write a program to perform the above task.

(25) A number is said to be 'Multiple Harshad' number, when divided by the sum of its digits, produces another 'Harshad Number'. Write a program to input a number and check whether it is a multiple 'Harshad Number' or not.

[Hint: When a number is divisible by the sum of its digit, it is called 'Harshad Number']

Sample Input: 6804

Ans. 6708 6+8+0+4 = 18 6804/18 = 378

378 3+7+8= 18 378/18 = 21

21 2+1 = 3 21/3 = 7

Sample Output: Multiple Harshad Number

(26) Write a program to input a number and print whether the number is a 'special number' or not. A number is said to be a special number if the sum of the factorial of the digits of the number is the same as the original number.

Sample Input: 145 is a special number because 1! + 4! + 5! = 1 + 24 + 120 = 145 where,! stands for factorial of the number and the factorial value of a number is the product of all integers from 1 to that number. e.g.•: 5! = 1\*2\*3\*4\*5 = 120

(27) A computerized bus charges fare from each of its passengers based on the distance traveled as per the tariff gave below:

|  |  |
| --- | --- |
| Distance (in km) | Charges |
| First 10 km | Rs.50 |
| Next 15 km | Rs.4.50/km |
| More than 25 km | Rs.4.00/km |

As the passenger enters the bus, the computer prompts 'Enter distance you intend to travel'. On entering the distance, it prints his ticket and the control goes back for the next passenger. At the end of the journey, the computer prints the following:

1. the number of passengers travelled
2. total fare received

Write a program to perform the above task.

[Hint: Perform the task based on User controlled loop]

(28) On the basis of sales, a pharmaceutical company announces the following new tariff of commission for their Medical Representatives and Distributors.

|  |  |  |
| --- | --- | --- |
| Sale | Commission of Representative | Commission of Distributor |
| Up to Rs.10,000 | 5% | 2% |
| Rs.10,001-Rs.20,000 | 8% | 3% |
| Rs.20,001-Rs.30,000 | 10% | 4% |
| More than Rs. 30,000 | 12% | 5% |

Write a program to accept monthly sale from 50 different representatives along with their distributors. Calculate their commissions and display the output in the given format:

|  |  |  |  |
| --- | --- | --- | --- |
| Sl. No. | Sale | Commission of Representative | Commission of Distributor |
| xxx | xxx | xxx | xxx |

(29) Write a program to generate a triangle or an inverted triangle till n terms based upon the User's choice of triangle to be displayed.

|  |  |
| --- | --- |
| Example 1: | Example 2: |
| Input: Type 1 for a triangle and Type 2 for an inverted triangle  Enter your choice 1  Enter the number of terms 5 | Input: Type 1 for a triangle and Type 2 for an inverted triangle  Enter your choice 2  Enter the number of terms 6 |

Sample Output:

1 6 6 6 6 6 6

2 2 5 5 5 5 5

3 3 3 4 4 4 4

4 4 4 4 3 3 3

5 5 5 5 5 2 2

1

(30) You can multiply two numbers 'm’ and 'n' by having repeated addition of 'm' for ‘n’ number of times.

For example, 5 \* 3 = 15, can be performed by adding 5 three times

5 + 5 + 5 = 15

Similarly, successive subtraction of two numbers produces 'Quotient' and 'Remainder' when two numbers 'a' is divided by `b’ (a>b).

For example, 5/2 Quotient = 2 and Remainder =1

Follow the steps shown below:

|  |  |  |
| --- | --- | --- |
| Process | Result | Counter |
| 5-2 | 3 | 1 |
| 3-2 | 1 | 2 |

Sample Output: The last counter value represents 'Quotient' 2

The last result value represents 'Remainder' 1

Write a program to accept two numbers. Perform multiplication and division of the numbers as per the process shown above by using switch case statement.

(31) Write a menu driven program to accept a number from the User and check whether it is a 'BUZZ' number or to accept any two numbers and print the ‘GCD’ of them.

1. A BUZZ number is the number which either ends with 7 or is divisible by 7.

2. GCD (Greatest Common Divisor) of two integers is calculated by continued division method. Divide the larger number by the smaller, the remainder then divides the previous divisor. The process is repeated till the remainder is zero. The divisor then results the GCD.

(32) Write a menu driven program to accept a number from the user and check whether it is a Prime number or an Automorphic number.

(i) Prime number: (A number is said to be prime, if it is divisible by 1 and itself)

Example: 3,5,7,11….

(ii)Automorphic number: (Automorphic number is the number, which is contained in the last digit(s) of its square.)

Example: 25 is an Automorphic number as its square is 625 and 25 is present as the last two digits.

(33) Write a menu driven program to perform the following tasks by using Switch case statement:

(i) To print the series:

0,3, 8, 15, 24, ............... to n terms. (value of 'n' is to be an input by the user)

(ii)To find the sum of the series:

S=

(34) Using a switch statement write a menu driven program to:

(i) Generate and display the first 10 terms of the Fibonacci series

0, 1, 1, 2, 3, 5 ..........

The first two Fibonacci numbers are 0 and 1, and each subsequent number is the sum of the previous two.

(ii)Find the sum of the digits of an integer that is input.

Sample Input: 15390

Sample Output: Sum of the digits = 18

For an incorrect choice, an appropriate error message should be displayed.

(35) Using the switch statement, write a menu driven program:

(i) To find and display all the factors of a number input by the user (including 1 and the excluding the number itself).

Example:

Sample Input: n = 15

Sample Output: 1, 3, 5

(ii)To find and display the factorial of a number input by the user (the factorial of a non-negative integer n, denoted by n!, is the product of all integers less than or equal to n.

Example:

Sample Input: n = 5

Sample Output: 5! = 1\*2\*3\*4\*5 = 120

For an incorrect choice, an appropriate error message should be displayed.