LAB ASSIGNMENT-4

Question1: Write a java program that gets three integers from the user. Count from the 1st no. to the 2nd no. increament by the 3rd no. Use for loop to do it. Also displays the sum of numbers displayed between 1st no. and 2nd no.

Ans

```
import java.util.*;
public class Q1
{
  public static void main(String[] args)
  {
    Scanner sc= new Scanner (System.in);
    System.out.println("Enter first no.");
    int a= sc.nextInt();
    System.out.println("Enter second no.");
    int b=sc.nextInt();
    System.out.println("Enter third no.");
    int c=sc.nextInt();
    int sum=0;
    for(int i=a;i<=b;i+=c)
    {
      System.out.print(k+"  ")
      sum+=k;
    }
    System.out.println("\n The sum of the
    no. displayed is "+sum);
  }
}
```

Output:

Enter the first no. = 4
Enter second no. = 8
Enter third no. = 2
Sum of the no. displayed = 6

Question 2 : An integer n is divisible by 9 if the sum of its digits is divisible by 9. Use this concept in your program to determine whether or not the number is divisible by 9. Test it on the following nos. Use while loop.

n = 123456
n = 154368
n = 621594

Ans

```
import java.util.*;
public class Q2
{
  public static void main(String[] args)
  {
    Scanner sc = new Scanner (System.in);
    System.out.println("Enter a number : ");
    int n = sc.nextInt();
    int k = n;
    int c = 1, s = 0, a;
    while (k <= b)
    {
      a = b%10;
      s = a;
      b = b/10;
    }
    if (s%9 == 0)
      System.out.println(" The number " + n +
      " is divisible by 9 ");
    else
      System.out.println(" the number " + n + " is
      divisible by 9 ");
  }
}
```

Output :

Enter a number : 123456
The number 123456 is divisible by 9.
Enter a number = 154368
The number 154368 is divisible by 9.
Enter a number = 621594
The number 621594 is divisible by 9.

Question 3: Write a java program that takes an integer N from user, uses Math.Random() to print N random integers between 1 to N and then print that average value. Use do while loop.

Ans

```
import java.util.*;
public class Q3
{
  public static void main(String[] args)
  {
    Scanner sc=new Scanner(System.in);
    System.out.print("Enter a number:");
    int n=sc.nextInt();
    int r, k=1, s=0, avg;
    String st=" ";
    do
    {
      r=1+(int)((n-1)*Math.random());
      st=st+" "+r;
      s+=r;
      k++;
    }while(k<=n);
    avg=s/n;
    System.out.println("Random numbers generated
    are : "+st);
    System.out.println("Average of "+n+" random
    numbers are "+avg);
  }
}
```

Output :

```
Enter a number:
5
Random number generated are : 4 1 2 4 3
Average of 5 randoms numbers are : 2
```

Question 4: Write a program that finds greatest common divisor (GCD) of 2 no.s using Euclid algorithm, which is an iterative computation based on the following observation, i.e. if y divides x, the GCD of x and y is y; otherwise gcd of x and y is same as GCD of x%y and y.

Ans.
```
import java.util.*;
public class Q4
{
  public static void main(String[] args)
  {
    Scanner sc = new Scanner(System.in);
    int x, y, r = 0;
    System.out.println("Enter x:");
    x = sc.nextInt();
    System.out.println("Enter y:");
    y = sc.nextInt();
    do
    {
      r = x%y;
      x = y;
      y = z;
    }
    while(x%y != 0);
    System.out.println(y);
  }
}
```

Output:
```
Enter x = 13
Enter y = 17
1
```

Question 5: Write a program to check if a no. is perfect number or not.

Ans.
```
import java.util.*;
public class Q5
{
  public static void main (String[] args)
  {
    Scanner sc = new Scanner(System.in);
    int s = 0;
    System.out.print("Enter a number:");
    int n = sc.nextInt();
    for (int i=1; i<n; i++)
    {
      if (n%i==0)
      {
        s+=i;
      }
    }
    System.out.println("Sum = " + s);
    if (s==n)
    {
      System.out.println(n+" is a perfect number.");
    }
    else
    {
      System.out.println(n+" is not a perfect number.");
    }
  }
}
```

Output: Enter a number = 28
Sum = 28
28 is a perfect number.

Question 6 : Write a program to enter 2 nos through keyboard. Write a program to find the value of one number raised to the power another.

Ans

```
import java.util.*;
public class Q6
{
  public static void main(String[] args)
  {
    Scanner sc = new Scanner(System.in);
    int b, p, count=1, r=1;
    System.out.println("Enter the base :");
    b=sc.nextInt();
    System.out.println("Enter the power :");
    p=sc.nextInt();
    while (count<=p)
    {
      r=r*b;
      count+=1;
    }
    System.out.println(b+" to the power "+p+" is"
    +r);
  }
}
```

Output :

```
Enter the base = 2
Enter the power = 3
2 to the power 3 is 8
```

Question 7: Write a java program to print the multiplication table entered by the user.

Ans
```
import java.util.*;
public class Q7
{
 public static void main(String[] args)
 {
  Scanner sc=new Scanner(System.in);
  int b, count=1, r;
  System.out.println("Enter a number for which
  you want to find the multiplication table: ");
  b=sc.nextInt();
  System.out.println("The multiplication table
  of "+b+" is ");
  while (count<=10)
  {
    r=b*count;
    System.out.println(b+"*"+count+"="+r);
    count+=1;
  }
 }
}
```

Output: Enter a no. for which you want to find the multiplication table = 4
the multiplication table of 4 is

4*1=4
4*2=8
4*3=12
4*4=16
4*5=20
4*6=24
4*7=28
4*8=32
4*9=36
4*10=40

Question 8: Write a program that generates 2 random integeres no. between 1 to 10 and ask the user to guess what the no. is. If the user guess is higher than random number, the program should display "Too high, try again", if the user the user guess is lower than random no., the program should display "Too low, try again". If user guess matched the random no., it should display "Good guess". The program should use a loop that repeats until the user correctly guess the random no. and display "Good guess".

Ans:
```
import java.util.*;
public class Q8
{
 public static void main(String[] args)
 {
  Scanner sc= new Scanner(System.in);
  while true do
  {
   int r=1+(int)((10-1)*Math.random());
   System.out.print("User guess: ");
   int ug=sc.nextInt();
   System.out.print("Computer guess:"+r);
   if (ug>r)
   {System.out.println("Too high, try again");
   }
   else if (ug<r)
   {
    System.out.println("Too low, try again");
   }
   else
```

```
        {
            System.out.println("Good guess");
        }
    }while(ug != 8)
    sc.close();
  }
}
```

Question 9: Write a java program to take an integer input from the user and print the input by removing all zeros.
Eg. input = 10200, then output : 12

Ans.

```
import java.util.*;
public class Q9
{
  public static void main(String[] args)
  {
    Scanner sc= new Scanner (System.in);
    System.out.print("Enter an integer number: ");
    int n = sc.nextInt();
    int p=0, n1=0, num=n;
    while(n!=0)
    {
      int d= n%10;
      if(d!=0)
      {
        n1= n1+(int)(d*Math.pow(10,p));
        p++;
      }
      n= n/10;
    }
    System.out.println("After removing 0's from the number "+num+" the new no. is : "+n1);
  }
}
```

Output: Enter an integer = 20500
After removing 0's from the no. 20500, the new no. is 25.

Question 10: Write a java program to print the largest power of 3 less than or equal to N.

Ans.

```
import java.util.*;
public class Q10
{
  public static void main(String[] args)
  {
    Scanner sc= new Scanner(System.in);
    int x;
    System.out.print("Enter a no.");
    x=sc.nextInt();
    int z=x;
    int p=1;
    int c=0;
    while(p<=z)
    {
      p=p*3;
      c++;
    }
    p=p/3;
    c--;
    System.out.println("Largest power of 3 less than
    or equal to "+x+" is "+c+" i.e. 3 to the power"
    +c+" is "+p+" is less than or equal to "+x);
    sc.close();
  }
}
```

Output: Enter a no. 100
Largest power of 3 less than or equal to 100 is 4 i.e. 3 to the power 4 is 81 is less than or equal to 100.

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HOME ASSIGNMENT- 4

Question1. Write a java program to find the difference between the sum of squares of first 10 natural numbers and square of the sum.

Ans

```
public class HQ1
{
  public static void main (String[] args)
  {
    int sumsquare = 0, squaresum = 0;
    for (int i=1; i<=10; i++)
    {
      sumsquare = i*i;
      squaresum += i;
    }
    int z= squaresum * squaresum;
    int d= z - sumsquare;
    System.out.println(d);
  }
}
```

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Question 2: If we will list all the natural numbers below 10 that are are multiples of 3 or 5, we get, 3, 5 and 6. The sum of these multiples is 23. Write a Java program to get the sum of all the multiples of 3 or 5 below 1000.

Ans

```
public class HQ2
{
    public static void main(String[] args)
    {
        int sum=0;
        for(int i=1; i<1000; i++)
        {
            if(i%3==0 || i%5==0)
            {
                sum+=i;
            }
        }
        System.out.println(sum);
    }
}
```

Question 3: WAP using one for loop and one if statement, to print integers from 1000 to 2000 with 5 integers in each line. Hint: Use %. operation.

Ans

```
public class HQ3
{
  public static void main (String[] args)
  {
    int c=0;
   for (int i=1000; i<=2000; i++)
   {
     System.out.print(i+"  ");
     c+=1;
     if (c%.5==0)
     {
       System.out.println();
     }
   }
  }
}
```

Question 4: Write a java program to print the sum of all ~~odd numbers and~~ even numbers and product of all odd numbers from 1 to N. where N is the input to the program.

Ans.
```
import java.util.*;
public class HQ4
{
  public static void main (String[] args)
  {
    Scanner sc = new Scanner (System.in);
    System.out.print("Enter N: ");
    int n = sc.nextInt();
    int podd = 1, seven = 0;
    for (int i = 1; i <= N; i++)
    {
      if (i%2 == 0)
      {
        seven += i;
      }
      else
      {
        podd *= i;
      }
    }
    System.out.println(" Sum of all even no.s = "+seven);
    System.out.println(" Product of all odd no.s = " +podd);
    sc.close();
  }
}
```

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Output : Enter N : 11
Sum of all even numbers = 30
~~Sum of~~ product of all odd numbers = 10395

Question 5 : WAP to print the following out using loop. Where input is the number of rows in output pattern.

```
1
1 2 1
1 2 1 3 1 2 1
1 2 1 3 1 2 1 4 1 2 1 3 1 2 1
```