

# ASSIGNMENT - 5

Question-1:- write a Java program to count the number of bits that are set to 1 in an integer.

```
public class SetCountBits
{
    public static void main (String[] args)
    {
        int n = 42;
        int count = 0;
        while (n > 0)
        {
            count += n & 1;
            n >>= 1;
        }
        System.out.println (count);
    }
}
```

Question-2: The Parity of a binary word is 1 if the number of 1's in the word is odd; otherwise, it is 0. Create a Java program to count the Parity of an integer.

```
public class Question2 {  
    public static void main (String[] args) {  
        int n = 42;  
        int count = 0;  
        while (n > 0)  
        {  
            count += n % 2;  
            n /= 2;  
        }  
        System.out.println ("The parity bit of the number  
        is " + count % 2);  
    }  
}
```

Question-3: write a program to swap the  $i^{th}$  bit with  $j^{th}$  bit of a number.

public class Question3

```
{ public static void main (String[] args) {  
    int a = 42;  
    int i = 2;  
    int j = 5;  
    System.out.println ("Original bits of the binary is :" +  
    Integer.toBinaryString (a));  
  
    int Ith = (a >> i) & 1;  
    int Jth = (a >> j) & 1;  
    if (Ith != Jth)  
        a = (I << i) | (J << j);  
    System.out.println ("After Swapping the value :" +  
    Integer.toBinaryString (a));  
}
```

Question-4: Write a program that takes a 8 bit word and returns the 8-bit word consisting of bits in reverse order.

Code:-

```
public class Question4
{
    public static void main (String[] args)
    {
        int number = 11;
        System.out.println ("Before Swapping:" + Integer.toBinaryString
                            (number));
        int res = 0;
        while (number > 0);
        {
            res = res << 1;
            if ((int)(number & 1) == 1)
                res |= 1;
            number >>= 1;
        }
        System.out.println ("After Swapping:" + Integer.toBinaryString
                            (res));
    }
}
```

Question-5: Write a java program to compute  $xy$  without arithmetic operators.

Code:-

```
public class Questions
{
    public static void main (String[] args).
    }
```

```
int product = 10 0;
int x = 5;
int y = 10; int product = 0 0;
for (int i=0 ; i<y ; i++)
{
    product += sum sum (product, x);
}
System.out.print ("Product of " + x + " and " + y + " is " + product);

}

static int sum (int x, int y)
{
    for (int i=0 ; i<y ; i++)
    {
        x++;
    }
    return x;
}
```

Question-6: complete x/y without arithmetic operators

public class Question6

```
{ public static void main (String[] args)
{ int x=6;
  int y = 3;
  int quotient = divide (x,y);
  System.out.println ("Quotient of " + x + " divided by "
                      y + " is " + quotient); }

static int divide (int x, int y)
{ int quotient = 0;
  while (x >= y)
  { int quotient=0;
    while (x>=y)
    {
      x = x - y;
      quotient++;
    }
    return quotient;
  }
}
```

Question-7: write a program to find x<sup>y</sup>

```
public class Question7
{ public static void main (String[] args)
{ int x = 9;
  int y = 3;
  int product = 1;
  while (y != 0)
  { product *= x;
    y--;
  }
  System.out.println (product);
}}
```

Question-8:-  
Write a program to find the reverse of a number  
For example, if the input is 123 output is 321.

Code:-

```
public class Question8
{
    public static void main (String[] args)
    {
        int num = -245;
        int reversed = 0;
        while (num != 0)
        {
            int digit = num % 10;
            num /= 10;
            reversed = (reversed << 1) + (reversed << 3) + digit;
        }
        System.out.println (reversed);
    }
}
```

Question-9:-

(a) write a program to check whether a number is Palindrome or not.

```
public class Question9a {
    public static void main (String[] args)
    {
        int x = 1232;
        int temp = x;
        int rev = 0;
        while (x > 0)
        {
            rev = (rev * 10) + (x % 10);
            x /= 10;
        }
        if (temp == rev)
            System.out.println ("yes it is a Palindrome number");
        else
            System.out.println ("No it is not a Palindrome number");
    }
}
```

(b) write a java program to check whether a string is Palindrome or not.

```
public class Question9b
{
    public static void main (String[] args)
    {
        String str = "Radaar", reverseStr = "";
        int strLength = str.length();
        for (int i = (strLength - 1); i >= 0; --i)
            reverseStr = reverseStr + str.charAt(i);
        if (str.toLowerCase().equals (reverseStr.toLowerCase()))
            System.out.println (str + " is a Palindrome String");
        else
            System.out.println (str + " is not a Palindrome String");
    }
}
```

Question-10: write a Java program that reads two float numbers and checks whether the difference between these two number is less than  $\epsilon$  ( $E<1$ ).

Code:-

```
import java.util.*;  
public class Question10  
{ public static void main (String [] args)  
{ Scanner obj = new Scanner (System.in);  
    float x = obj.nextFloat();  
    float y = obj.nextFloat();  
    if (Math.abs (x-y) > 1)  
        System.out.println ("No the difference is not less than  
                           epsilon");  
    else  
        System.out.println ("the difference is greater than  
                           epsilon");  
}}
```

Question-11: write a Java program that reads two an integer number and counts that number of digits that are even.

public class Question11

```
{ public static void main (String [] args)  
{ Scanner obj = new Scanner (System.in);  
    int x = obj.nextInt();  
    int even = 0;  
    int odd = 0;  
    while (x > 0)  
    { int digit = x % 10;  
        if ((digit % 2 == 0))  
            even++;  
        else  
            odd++;  
        x /= 10;  
    }  
    System.out.println ("Even digit is :" + even + " Odd digit  
                       is " + odd);  
}}
```

Question-12: write a Java program that reads two integer number and create a third number by taking the first two digits of the first number and the last two digits of the second number

Code:-

```
import java.util.*;
public class Question12
{
    public static void main (String[] args)
    {
        Scanner obj = new Scanner (System.in);
        int x = obj.nextInt();
        int y = obj.nextInt();
        int c = 0;
        int temp = x;
        while (x/100 > 0)
        {
            x = x/10;
        }
        int ans = x*100 + (y%100);
        System.out.println (ans);
    }
}
```

Question-13: Write a java Program to count the frequency of each digit of a number.

```
import java.util.*;
public class Q13
{
    public static void main (String[] args)
    {
        Scanner obj = new Scanner (System.in);
        int x = obj.nextInt();
        int [] arr = new int [10];
        while (x>0)
        {
            int digit = x%10;
            arr [digit] += 1;
            x /= 10;
        }
        for (int i=0; i<10; i++)
        {
            if (arr[i] != 0)
                System.out.println ("Digit " + arr[i] + " repeats " + arr[i] + " times");
        }
    }
}
```

Question-16: write a java program that prints all prime numbers in a range.

```
import java.util.*;  
public class Q16  
{ public static void main (String[] args)  
{ Scanner obj= new Scanner (System.in);  
    int x=obj.nextInt();  
    for (int i=2; i<=x; i++)  
        if (isPrime (i))  
            System.out.print (i + " , ");  
}  
public static boolean isPrime (int n)  
{ for (int i=2; i<=(int)(Math.sqrt (n)); i++)  
    { if (n % i == 0)  
        return false;  
    } return true;  
}
```

Question-17: write a java program that returning true if the number is even else returns false.

```
import java.util.*;  
public class Q17  
{ public static void main (String[] args)  
{ Scanner obj= new Scanner (System.in);  
    int x=obj.nextInt();  
    System.out.println (x + " is Even ? " + isEven(x));  
}  
public static boolean isEven (int n)  
{ return (n % 2) == 0;  
}
```

✓ 8/10/21

Question-14: write a java program to check whether a number is prime or not.

import java.util.\*;

public class Q14

{ public static void main ( String [ ] args )

{ Scanner obj = new Scanner ( System.in );

int x = obj.nextInt ();

if ( isPrime ( x ) )

System.out.println ( x + " is a prime number " );

else

System.out.println ( x + " is not a prime number " );

3 public static boolean isPrime ( int n )

{ for ( int i = 2 ; i <= ( int ) ( Math.sqrt ( n ) ) ; i ++ )

if ( n % i == 0 )

return false;

return true;

}

Question-15: write a program to print the first 100th prime number.

public class Q15

{ public static void main ( String [ ] args )

{ int c = 0;

for ( int i = 2 ; i <= 100 )

{ if ( isPrime ( i ) )

System.out.println ( i + " " );

i ++;



break;

} public static boolean isPrime ( int n )

{ for ( int i = 2 ; i <= ( int ) ( Math.sqrt ( n ) ) ; i ++ )

if ( n % i == 0 )

return false;

return true;

}