

REVISION SHEET 4
CLASS : XII
SUBJECT : COMPUTER SCIENCE
TOPIC: FUNCTION/RECURSION/OUTPUTS

1. A class **Fibo** has been defined to generate the Fibonacci Series 0,1,1,2,3,5,13,..... (Fibonacci series are those in which the sum of the previous two terms is equal to the next term).

The class having following descriptions are given below:

Class Name	:	Fibo
Data Members/Instance Variables	:	
start	:	integer to store start value
end	:	integer to store end value
Member Functions	:	
Fibo()	:	default constructor to assign initial values to start and end
void input()	:	accept the values of start and end
int fiboTerm(int n)	:	return n th term of the given Fibonacci Series using Recursive technique .
void display()	:	to display the given Fibonacci Series from start to end by invoking the function int fiboTerm(int)

Write the main function to create object of the class and call above member methods.

2. A class defines a recursive function to convert a binary number into its equivalent decimal form. Example: Let Binary number: 1101. Its equivalent decimal = $1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 = 13$

Design a class **Binary** in which following descriptions are given below:

Class Name	:	Binary
Data Members/Instance Variables	:	
bin	:	long integer to store binary number
dec	:	long integer to store decimal number
Member Functions	:	
Binary()	:	default constructor to assign initial values to bin and dec
void input()	:	accept the value of bin
long convertDec(long, int)	:	to convert and return the binary number stored in bin into its equivalent decimal using Recursive technique .

void display() : to display the binary number and its equivalent decimal number by invoking the function long convertDec(long)

Write the main function to create object of the class and call above member methods.

3. A class **Sum_Series** is declared to find the sum of the following series:

$S = x^2/1^1 + x^4/2^2 + x^6/3^3 + x^8/4^4 + \dots + n$ terms.

Some of the class members are given below:

Class Name : **Sum_series**
Data Members/Instance Variables :
x : integer to store a number
n : integer to store the number of terms
sum : double type to store the sum of the series

Member Functions :

Sum_series () : default constructor to assign initial values to s and n.
Sum_series(int nn, int xx) : parameterized constructor to assign the values n=nn and x=xx
int getPower(int m, int n) : calculates and return m^n using **recursive technique**.
void sum() : to calculate and print the sum of the series by invoking the function intgetPower(int ,int)

Write the main function to create object of the class and call above member methods.

A class **Cheker** has been defined to check whether a number is Palindrome or not. The details of the class are given below:

Class Name : **Cheker**
Data Members/Instance Variables :
num : long integer to store a number
rev : long integer to store the reverse of the number
Member Functions :
Cheker (long z) : Parameterized constructor to assign num=z
long ReverseNum(long q) : calculates and return reverse of the number 'num', store in 'rev'**recursive technique** and return it.
void check() : to check that the number 'num' is Palindrome number or not by invoking the function int ReverseNum(long)

Write the main function to create object of the class and call above member methods.

5. A class **dec_Bin** has been defined to convert decimal number into its equivalent binary number. The details of the class are given below:

Class Name	:	dec_Bin
Data Members/Instance Variables	:	
n	:	integer to be convert to its binary equivalent.
Member Functions	:	
dec_Bin()	:	Default Constructor to assign initial value to n and s
void getData()	:	to accept the value of 'n'
int Convert_Bin(int d)	:	calculates and returns the binary number of 'd' using the recursive technique .
void PrintValues()	:	to Print the decimal number and its binary equivalent by invoking the function int Convert_Bin(int)

Write the main function to create object of the class and call above member methods.

6. With reference to the following code, answer the question that follows:

```
void trick(int a, int b)
{
int p=1;
for(int j=1;j<=b;j++,p*=a);
System.out.println(p);
}
```

- i) What will be the output of the method trick() when the vlaue of a=3 and b=4
- ii) What is the method trick() computing?

7. With reference to the following code, answer the question that follows:

```
void play(int n)
{
int s=0;
while(n!=0)
{
s=s*10 + n-(n/10)*10;
}
System.out.println(s);}

```

- i) What will be the output of the method play() when the vlaue of n=6597
- ii) What is the method play() computing?

8. With reference to the following code, answer the question that follows:

```
int solve(int p, int q)
{
for (int r=0;p>0;r=q%p,q=p,p=r);
return (p==0)?q:-1;
}}
System.out.println(s);}

```

- i) What will be the output of the method solve() when the vlaue of p=14,q=18
- ii) What is the method play() computing?

9. With reference to the following code, answer the question that follows:

```
int Afunction(int x, int y)
{
int p=1,n=x;
```

```

while(y>0)
{
if(y%2==1) p*=n;
y/=2;
n*=n;}
return p;}

```

- i) What will be the output of the method Afunction(2,7)?
- ii) What is the method Afunction() computing?

10. With reference to the following code, answer the question that follows:

```

void numbers(int n)
{
if(n>0)
{
System.out.print(n+" ");
numbers(n-2);
System.out.print(n+" ");
}
}

```

- i) What will be the output of the method numbers(6)?
- ii) What is the method numbers() computing?

11. With reference to the following code, answer the question that follows:

```

int strange(int x, int y)
{
if(x>=y)
{
x-=y;
return strange(x,y);
}
else return x;
}

```

- i) What will be the output of the method strange(20,5)?
- ii) What is the method strange() computing?

12. The following program code sorts the column of a double dimensional array in descending order using Bubble sort technique. There are some places in the code marked as ?1?, ?2?, ?3?, ?4? and ?5? which are to be replaced by a statement/expression so that the code works correctly.

```

void sortcol(int M[][])
{
int r=M.length, c=?1?, t;
for(int k=0;k<?2?;k++){
for(int i=0;i<r-1;i++){
for(int j=0;j<r-1-l;j++){
if(?3?)
{
?4?=M[i][k];
M[j][k]=?5?;
M[j+1][k]=t;
}}}

```