

USER DEFINED METHODS IN JAVA

SUBJECT :COMPUTER APPLICATION
CLASS 10 A

Function v/s Method

Q.) What is the difference between a function and a method.?

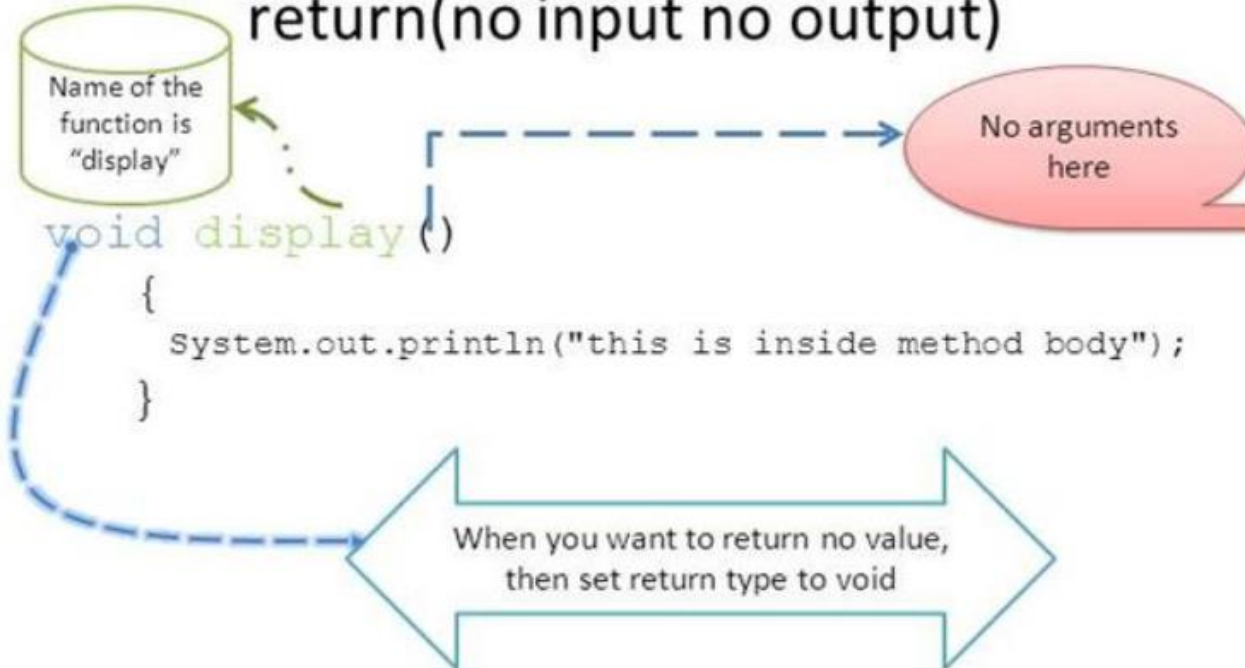
Ans.) **A method is a function that is written in a class.**

We do not have functions in java; instead we have methods. This means whenever a function is written in java. It should be written inside the class only. But if we take C++, we can write the functions inside as well as outside the class. So in C++, they are called member functions and not methods.

access return type name parameters
public void add (int a, int b)

```
public void add(int a, int b)
{
    // do stuff here
}
```

Function with no arguments and no return(no input no output)





Complete Program

```
public class function1  
{
```

```
    static void display()  
    {  
        System.out.println("this is inside method body");  
    }
```

```
    public static void main(String args[])  
    {  
        System.out.println("before function call");  
        display();  
        System.out.println("after function call");  
    }  
}
```



Add two integer numbers

```
int add(int a, int b)
{
    int c=a+b;
    return c;
}
```

Two Integer Arguments

Returning integer value to calling method

Display method
is called
method,
because it is
called by main
method

Complete Program

```
public class function1
```

```
{
```

```
    static int add(int a, int b)
```

```
    {
```

```
        int c=a+b;
```

```
        return c;
```

```
    }
```

```
    public static void main(String args[])
```

```
    {
```

```
        System.out.println(add(45,67));
```

```
    }
```

```
}
```

main method
is calling
method,
because it is
calling display
method.

Average of three integer numbers

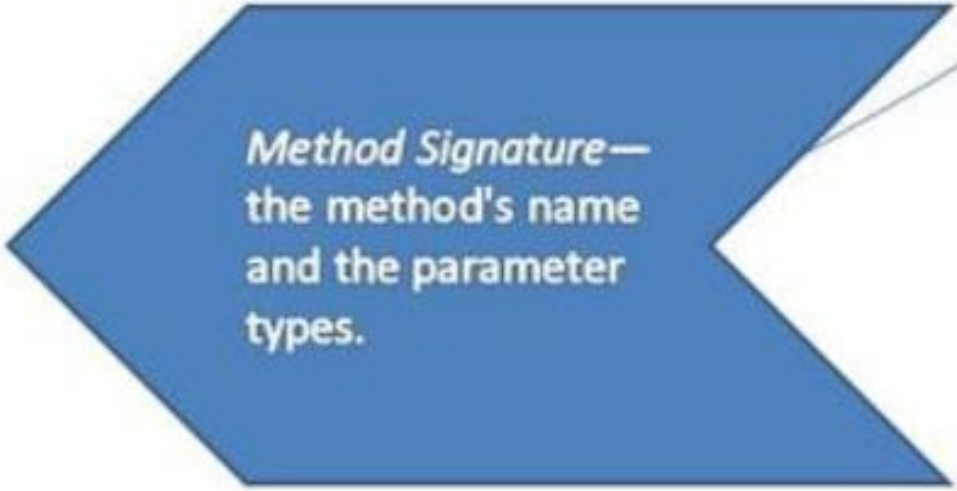
```
double avg(int a, int b, int c)
{
    double d;
    d= ((double) a+b+c) /3;
    return d;
}
```

Method Signature—
the method's name
and the parameter
types.

This method takes
multiple arguments and
returns single value

Calculate circle Area

```
double circleArea(float radius)  
{  
    double area=Math.PI*radius*radius;  
    return area;  
}
```



Method Signature—
the method's name
and the parameter
types.

Convert Fahrenheit to Celsius

```
double convertFahToCel(double fah)
{
    double cel=(fah-32)*5/9;
    return cel;
}
```

This method takes one
argument and returns
single value

Check number is even or not

```
boolean checkEven(int n)
{
    if (n%2==0)
    {
        return true;
    }
    else
    {
        return false;
    }
}
```

Method Signature—the method's name and the parameter types.

Check number is prime or not

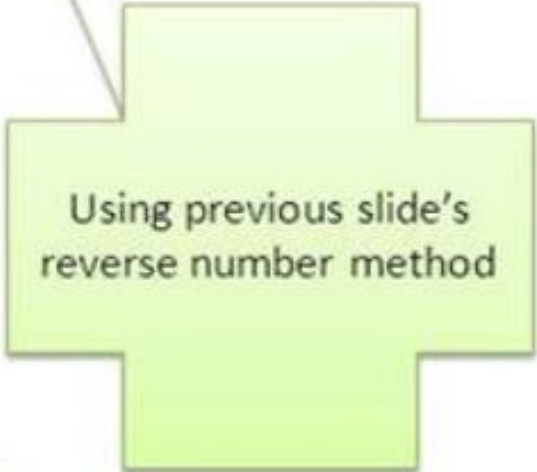
```
boolean isPrime(int n)
{
    int i;
    for( i=2;i<n;i++)
    {
        if(n%i==0)
        {
            break;
        }
    }
    if(n==i)
    {
        return true;
    }
    else
    {
        return false;
    }
}
```

Reverse number

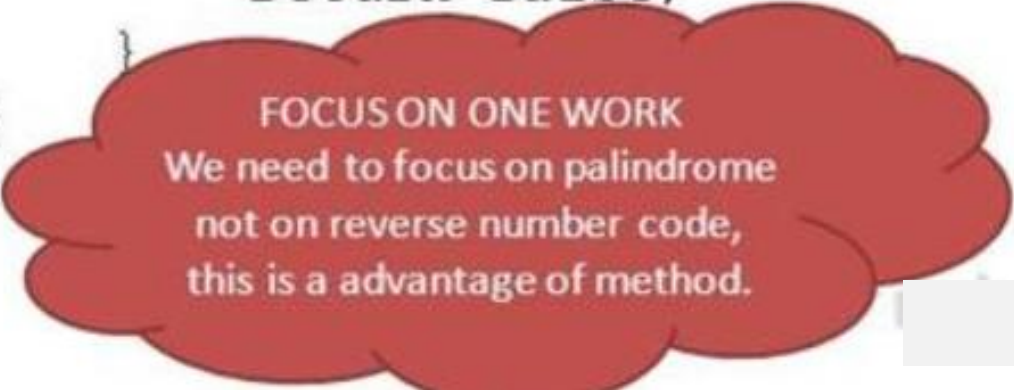
```
int reverseNumber(int n)
{
    int x=0;
    for( ; n!=0 ; )
    {
        int r=n%10;
        x=x*10+r;
        n=n/10;
    }
    return x;
}
```

Check number is palindrome or not

```
boolean isPalindrome(int n)
{
    int rev = reverseNumber(n);
    if(n==rev)
    {
        return true;
    }
    else
    {
        return false;
    }
}
```



Using previous slide's
reverse number method



FOCUS ON ONE WORK
We need to focus on palindrome
not on reverse number code,
this is a advantage of method.

LCM(Lowest Common Multiple) of 2 numbers

```
long getLCM(int n1, int n2)

long answer=1;
for(int i=2;n1!=1 && n2!=1;)
{
    if(n1%i==0 && n2%i==0)
    {
        n1=n1/i;
        n2=n2/i;
        answer=answer*i;
    }
    else if(n1%i==0)
    {
        n1=n1/i;
        answer=answer*i;
    }
    else if(n2%i==0)
    {
        n2=n2/i;
        answer=answer*i;
    }
    else
    {
        i++;
    }
} //end of for loop
answer=n1*n2*answer;
return answer;
} //end of this method
```

LCM of 3 Numbers

```
long getLCM(int n1,int n2,int n3)
{
    long result1 = getLCM(n1,n2);
    long finalResult=getLCM((int) result1,n3);
    return finalResult;
}
```

User Defined
getLCM() 2 argument
method

Narrowing
type
conversion

Method overloading on getLCM() method
differ by number of arguments

LCM of 4 Numbers

```
long getLCM(int n1, int n2, int n3, int n4)
{
    long result1 = getLCM(n1, n2, n3);
    long finalResult = getLCM((int) result1, n4);
    return finalResult;
}
```

User Defined
getLCM() 3
arguments method

Narrowing
type
conversion

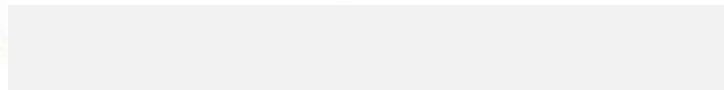
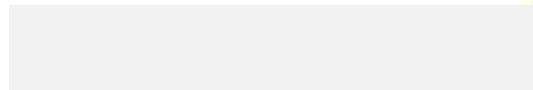
Method overloading on getLCM() method
differ by number of arguments

HCF(Highest Common Factor) of 2 numbers

```
int getHCF(int n1,int n2)
{
    int lcmOfThese=(int) getLCM(n1,n2);
    long product=n1*n2;
    int hcfOfThese=(int) (product/lcmOfThese);
    return hcfOfThese;
}
```

User Defined getLCM()
method

Narrowing type
conversion/manual type
casting/down casting



Print prime numbers between 1 and 100

```
void printPrime1To100 ()  
{  
    for(int i=1;i<=100;i++)  
    {  
        if(isPrime(i)==true)  
        {  
            System.out.println(i);  
        }  
    }  
}
```



The diagram illustrates a call to a user-defined method. A blue line originates from the `isPrime(i)` call within the `if` statement of the code block above. This line curves downwards and to the right, ending at the top-left corner of an orange parallelogram. The orange parallelogram is labeled "User defined method". Below the parallelogram, there are two grey rectangular boxes, one on the left and one on the right, which appear to be placeholders for additional code or context.

User
defined
method

Advantages of Using Methods

1. To help make the program more understandable
2. To modularize the tasks of the program
 - building blocks of the program
3. Write a module once
 - those lines of source code are called multiple times in the program

Advantages of Using Methods

4. While working on one function, you can focus on just that part of the program
 - construct it,
 - debug it,
 - perfect it.
5. Different people can work on different functions simultaneously.
6. If a function is needed in more than one place in a program, or in different programs, you can write it once and use it many times

THANK YOU