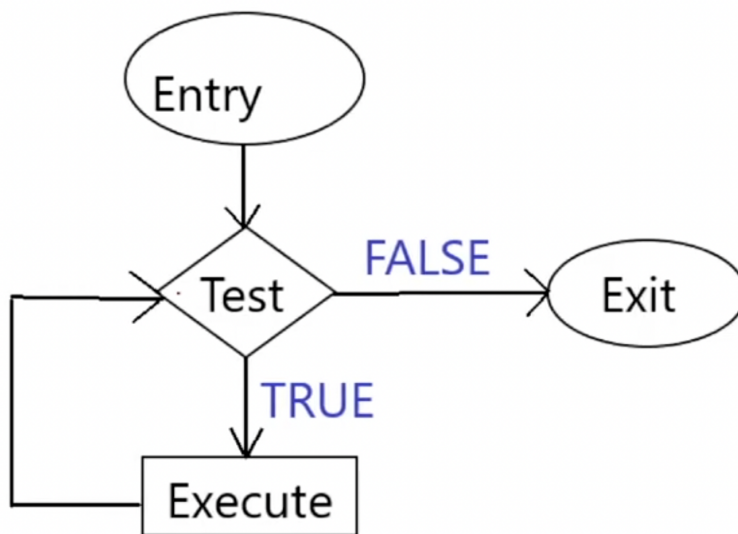


Loops

Loop is a set of statements that are repeated for a fixed number of times or until some condition occurs.

How do the loops work?



Advantages of loop:

- Don't have to repeat the code
- Debugging is easy
- Smaller code, less complex
- More Readable

Problems without loops:

- Debugging would be difficult
- Errors
- Have to repeat the same code
- Complexity increases

Types of loop

1. For Loop

```
for(initialization; test; change){  
    statements;  
}
```

Note:

- It is an Entry controlled loop, meaning we will only enter the loop if the condition(test) is true.

Common Errors:

- For arrays
 - `for(int i=0;i<n;i++)` -----> correct
 - `for(int i=0;i<=n;i++)` -----> wrong
- Make sure that your change variable is correct otherwise you will get TIME LIMIT EXCEEDED error

When to use for loop?

-> when we know the exact number times for which we want our loop to run

2. Enhanced For loop

```
for(data_type element_variable: name_of_collect/array){  
    statements;  
}
```

```
String[] arr = {"A", "B"};
```

```
for(String curr: arr){  
    System.out.println(curr);  
}
```

3. While Loop

```
initialization
while(test){
statements;
change;
}
```

Note:

While loop is used when you don't know the exact number of iteration but you know the condition or when you need an infinite loop

When your change has to be different you can use while loop

For example....

```
while(){

if(n<10)
{
    i+=3;
}else{
    i+=10;
}

}
```

Note:

- It is an entry controlled loop.
- while(1){} —> infinite loop
- Don't forget the change inside the while loop otherwise it will result in an infinite loop.

4. Do While Loop

```
initialization  
do{  
statements;  
change;  
}while(test);
```

We use do while loop when we want to execute our loop at least once

It is exit controlled loop