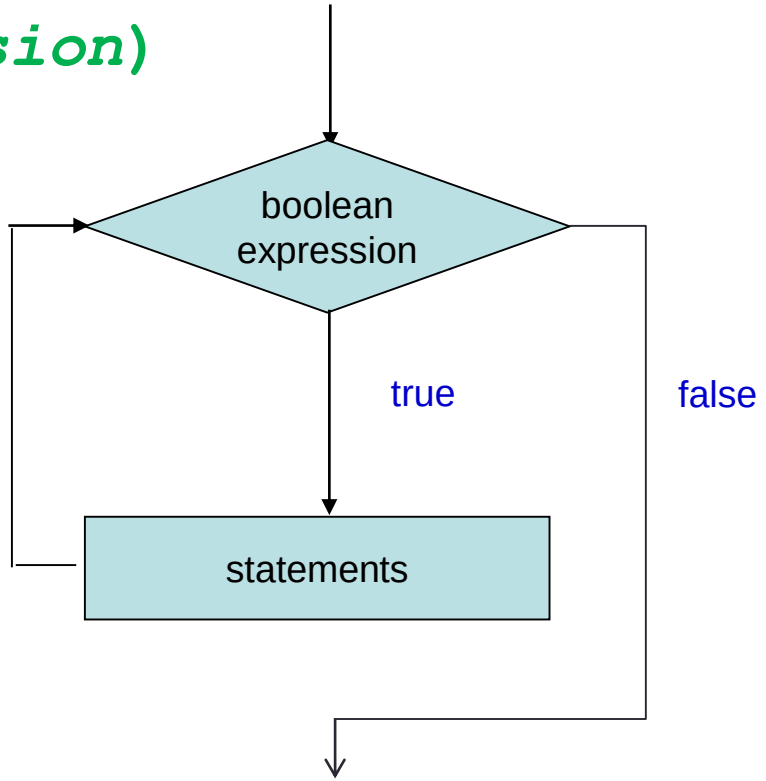
LAB 3

Exercise 1: While

```
while (boolean expression)
    statement;
```



Exercise 1

```
public class Lab4{
	public static void main(String[] args){
		int x = 1;
		int sum = 0;
		while(x<=50){
			sum = sum + x;
			x++;
		}
		System.out.println(sum);
	}
}
```

Exercise 1

```
public class Lab4{
	public static void main(String[] args){
		int x = 1;
		int sum = 0;
		while(x<=50);
		System.out.println(sum);
		System.out.println(x);
	}
}
```

```
public class Lab4{
	public static void main(String[] args){
		int x = 1;
		int sum = 0;
		while(x++<=50); // try print x in a loop
		System.out.println(sum);
		System.out.println(x);
	}
}
```

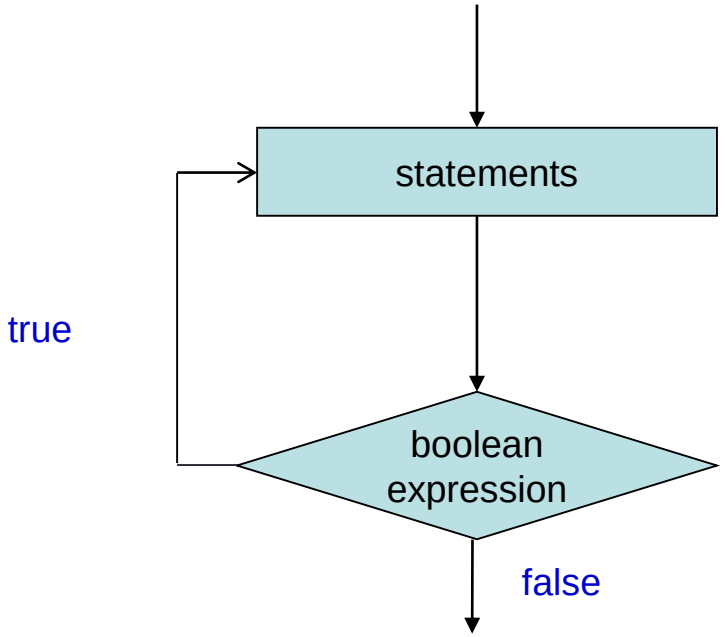
Exercise 1

```
public class Lab4{
	public static void main(String[] args){
		int x = 1;
		int sum = 0;
		while(++x<=50);
		System.out.println(sum);
		System.out.println(x);
	}
}
```

- What is x at the end?

Exercise 2: Do-While

```
do {
    statement;
}
while (boolean expression);
```



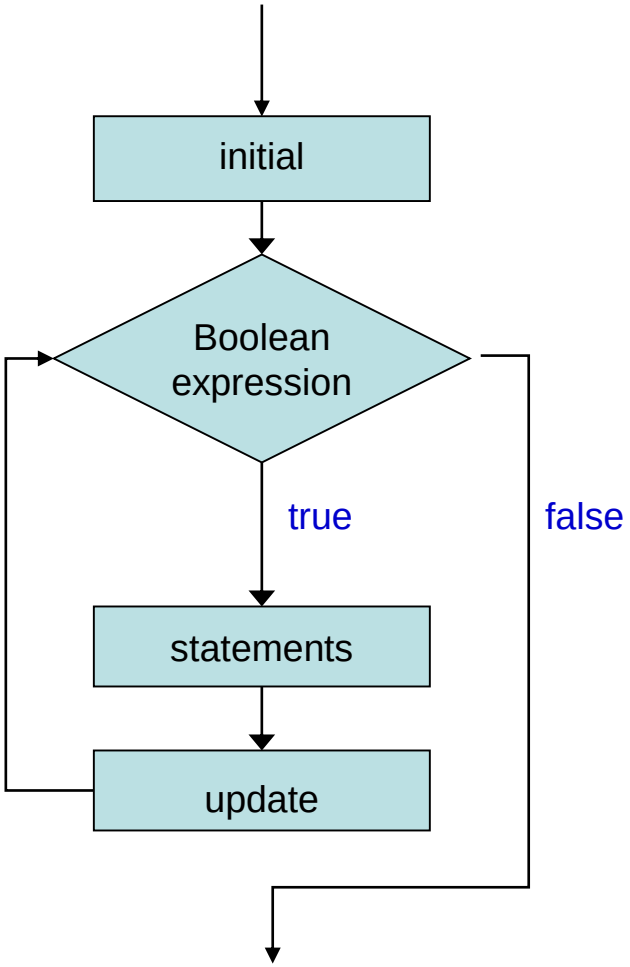
Exercise 2

```
public class Lab4{
	public static void main(String[] args){
		int x = 0;
		int sum = 0;
		do{
			x++;
			System.out.println(x);
		}while(x<=50);
	}
}
```

- What does it print at the end?

Exercise 3: For

```
for ( initialization ; boolean expression ; increment )
   statement;
```



Exercise 3

```
public class Lab4{
	public static void main(String[] args){
		int  i;
		for (i = 0; i < 100; i++) {
			System.out.println(“Number ” + i);
		}
	}
}
```

- Try to remove braces
  - It still works

Exercise 3:

- Add some more statements inside for loop

```
public class Lab4{
	public static void main(String[] args){
		int  i;
		for (i = 0; i < 100; i++) {
			System.out.println("Number " + i);
			System.out.println("Let's go to the
next loop");
		}
	}
}
```

- Then try to delete braces, what happen?
- Conclusions: use braces to put the scope of the loop (for all kinds of loop)

Exercise 3:

- What about declare int i at the for loop condition?

```
public class Lab4{
	public static void main(String[] args){
		for (int i = 0; i < 100; i++) {
			System.out.println(“Number ” + i);
		}
	}
}
```

- It still works !

Exercise 3:

- What about declaring i inside the loop?

```
public class Lab4{
	public static void main(String[] args){
		for (i = 0; i < 100; i++) {
			int i;
			System.out.println("Number " + i);
		}
	}
}
```

- Error since it cannot find variable i before it is used
- Conclusion: variables must be declared before it is used

Exercise 3:

- What if we use the variable outside the scope of for?

```
public class Lab4{
	public static void main(String[] args){
		for (int i = 0; i < 100; i++) {
			System.out.println("Number " + i);
		}
		System.out.println(i);
	}
}
```

- Errors, since it cannot find variable i

Exercise 3:

- What about declaring i outside the scope of for?

```
public class Lab4{
	public static void main(String[] args){
		int i;
		for (i = 0; i < 100; i++) {
			System.out.println("Number " + i);
		}
		System.out.println(i);
	}
}
```

- It works !

Exercise 3:

- Add semicolon at the end of for clause

```
public class Lab4{
	public static void main(String[] args){
		for (int i = 0; i < 100; i++); {
			System.out.println(“Number ” + i);
		}
	}
}
```

- Error since it cannot find variable i before it is used
- Conclusion: variables must be declared before it is used

Exercise 3

- Conclusion: in order to use the variable, it must be declared
  - inside the same scope of the statement using it
  - inside the scope that cover the scope of the statement

```
public class Lab4{
	public static void main(String[] args){
		int i;
		for (i = 0; i < 100; i++) {
			System.out.println("Number " + i);
		}
		System.out.println(i);
	}
}
```

- Apply for all kinds of loop

Exercise 4: Nested Loop

- Loop can be nested

```
public class Lab4{
	public static void main(String[] args){
		int count1 = 1;
		while (count1 <= 10){
			int count2 = 1;
			while (count2 <= 20){
				System.out.println (“Hello");
				count2++;
			}
		count1++;
		}
	}
}
```

Exercise 4

- Nested loop does not necessary to contain the same kind of loop

```
public class Lab4{
	public static void main(String[] args){
		int count1 = 1;
		while (count1 <= 10){
			for(int count2 = 1;count2 <= 20;count2++){
				System.out.println (“Hello");
			}
		count1++;
		}
	}
}
```