Day-3.1

Agenda

Operators
Type Casting
Array
Flow Control

Operators

Bit-wise Operators [& , | , ^]

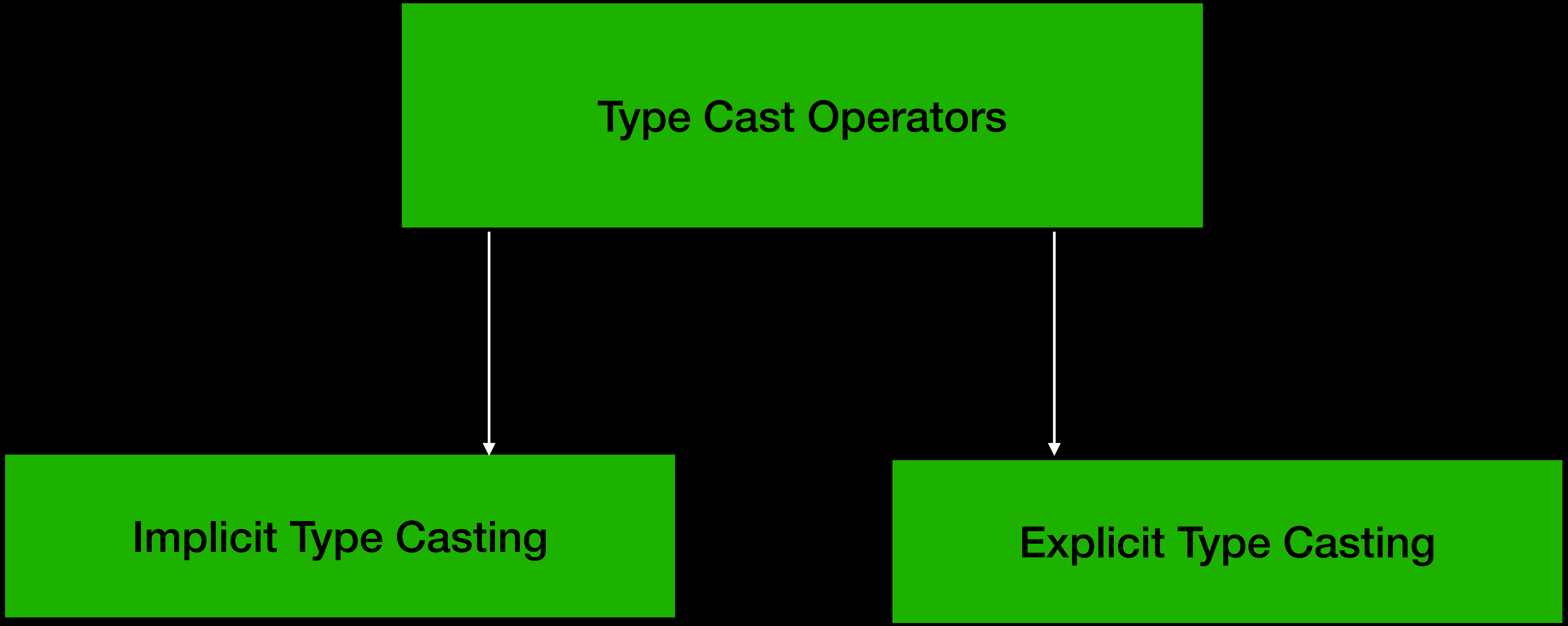
Operator	**Meaning**	**Definition**
&	AND	If both operands are True then result is True
|	OR	If at least 1 operand is True then result is True
^	X-OR	If both operands are different then result is true

A	**B**	**A & b**
0	0	0
0	1	0
1	0	0
1	1	1

A	**B**	**A | b**
0	0	0
0	1	1
1	0	1
1	1	1

A	**B**	**A ^ b**
0	0	0
0	1	1
1	0	1
1	1	0

Type Casting



Type Casting

Implicit Type Casting

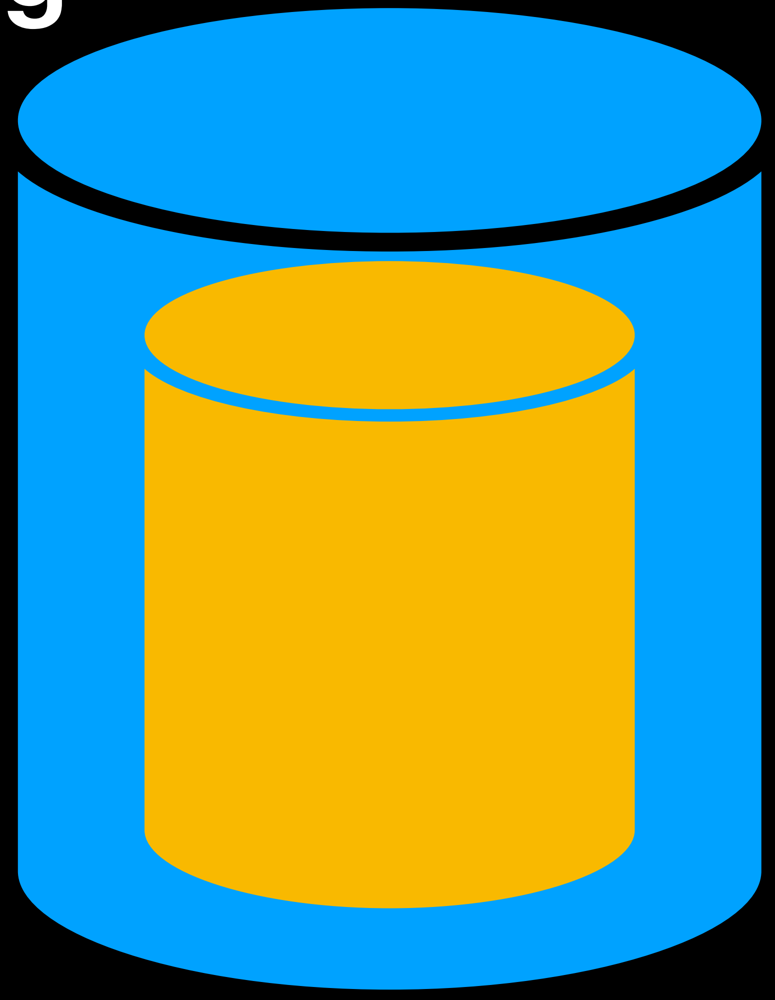
Compiler is the responsible to perform this type casting .

This typecasting is required when ever we are assigning smaller data types value to bigger

To the bigger data type variables.

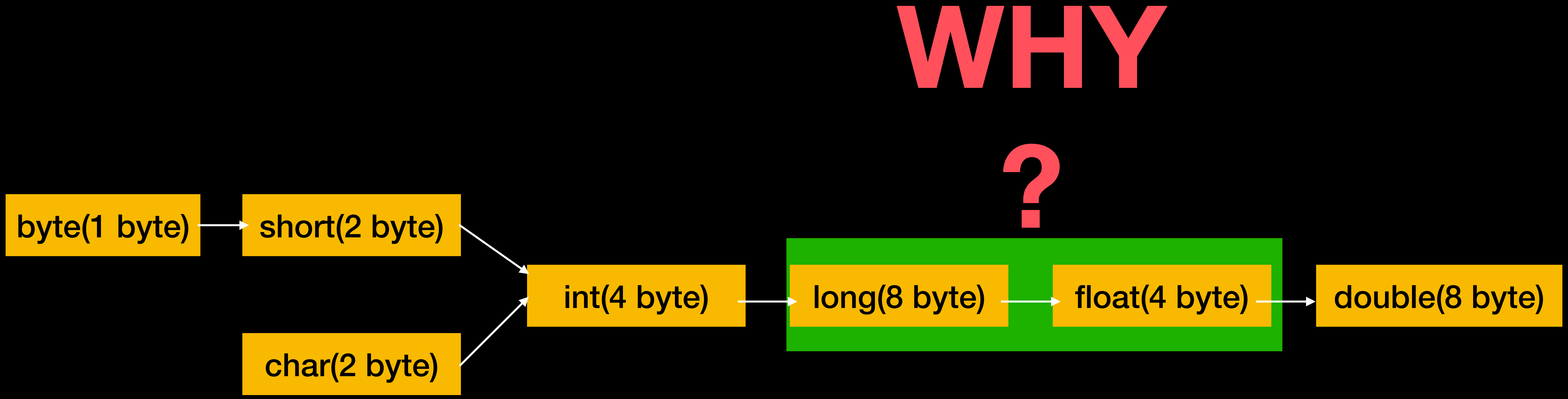
It is also known as "up-casting " **No loss of information in this type casting**

$$\begin{tikzcd}
\text{byte(1 byte)} \arrow[r] & \text{short(2 byte)} \arrow[dr] & & & & \\
& & \text{int(4 byte)} \arrow[r] & \text{long(8 byte)} \arrow[r] & \text{float(4 byte)} \arrow[r] & \text{double(8 byte)} \\
& \text{char(2 byte)} \arrow[ur] & & & &
\end{tikzcd}$$



Type Casting

Implicit Type Casting



$$\begin{tikzcd}
\text{byte(1 byte)} \arrow[r] & \text{short(2 byte)} \arrow[dr] & & & & \\
& & \text{int(4 byte)} \arrow[r] & \text{long(8 byte)} \arrow[r] & \text{float(4 byte)} \arrow[r] & \text{double(8 byte)} \\
& \text{char(2 byte)} \arrow[ur] & & & &
\end{tikzcd}$$

Type Casting

Implicit Type Casting

Although long use more bytes , but it has a smaller rang , max size is 2^63

Where as float can got up to 2^127

$$\begin{tikzcd}
\text{byte(1 byte)} \arrow[r] & \text{short(2 byte)} \arrow[dr] & & & & \\
& & \text{int(4 byte)} \arrow[r] & \boxed{\text{long(8 byte)}} \arrow[r] & \boxed{\text{float(4 byte)}} \arrow[r] & \text{double(8 byte)} \\
& \text{char(2 byte)} \arrow[ur] & & & &
\end{tikzcd}$$

Type Casting

Explicit Type Casting

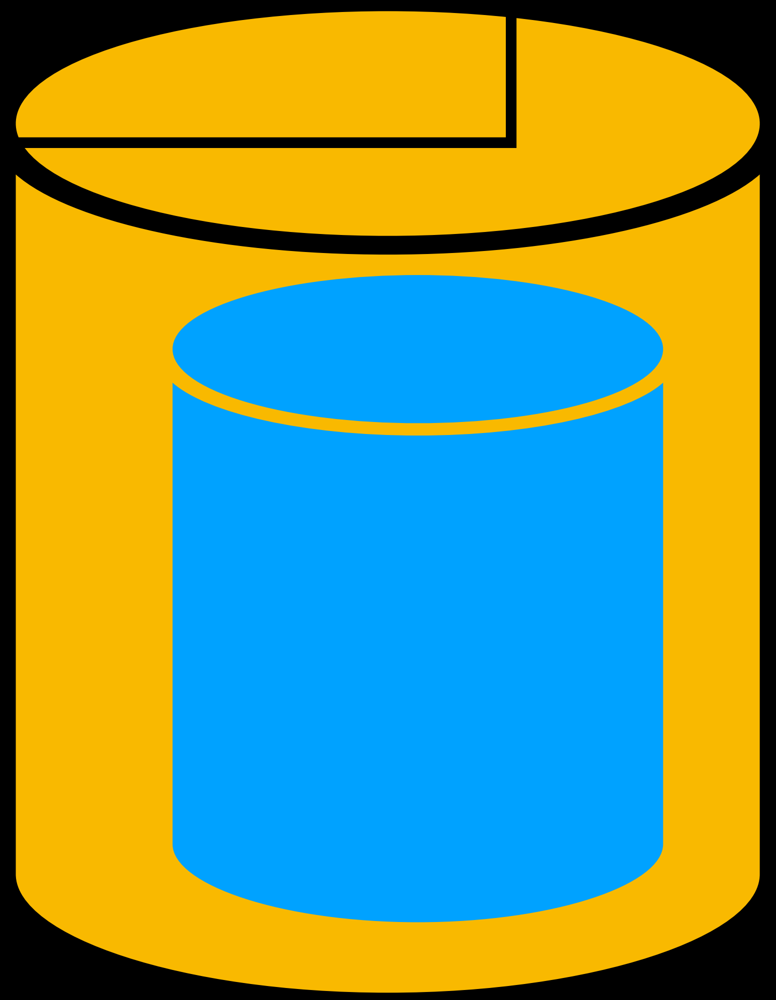
Programmer is responsible to perform the type casting

This typecasting is required when ever we are assigning bigger data types value to the smaller data type variables.

It is also known as “down-casting ”

There may be a chance of loss of information in this type casting

$$\begin{tikzcd}
\text{byte(1 byte)} & \text{short(2 byte)} \arrow[l] & & & & \\
& & \text{int(4 byte)} \arrow[ul] \arrow[dl] & \text{long(8 byte)} \arrow[l] & \text{float(4 byte)} \arrow[l] & \text{double(8 byte)} \arrow[l] \\
& \text{char(2 byte)} & & & &
\end{tikzcd}$$



Array

An array in an indexed collection of fixed no of homogeneous data element

The main advantage of array is we can represent multiple values under the same name.

But the main limitations of array is once we can create an array there is no chance

Of increasing/decreasing size based on our requirements .

Types of Array

- Single Dimension Array
- Double Dimensions Array or 2D Array
- Triple Dimensions Array or 3D Array

Array Deceleration

Single Dimension Array

1. int[ ] a;
2. int a [ ];
3. int [ ]a;

Double Dimensions Array or 2D Array

1. int[ ] [ ]   a;
2. int   [ ] [ ] a;
3. int   a[ ] [ ] ;
4. int[ ]   a[ ] ;
5. int[ ]   [ ]a ;
6. int   [ ]a [ ] ;

Triple Dimensions Array or 3D Array

1. int[ ] [ ] [ ]   a;
2. int   a[ ] [ ] [ ];
3. int   [ ][ ][ ] a;
4. int[ ]   [ ][ ]a ;
5. int[ ]   a[ ] [ ] ;
6. int[ ] [ ] a [ ] ;
7. int[ ] [ ] [ ] a;
8. int[ ] [ ] a[ ];
9. int [ ] [ ]a[ ];
10. int [ ] a [ ][ ];

Array Construction

Single Dimension Array

```
int[ ]  a = new int[SIZE];
```

Double Dimensions Array or 2D Array

```
int[ ][ ]  a = new int[ ] [ ];
```

Triple Dimensions Array or 3D Array

```
int[ ][ ] [ ] a = new int[ ] [ ] [ ];
```

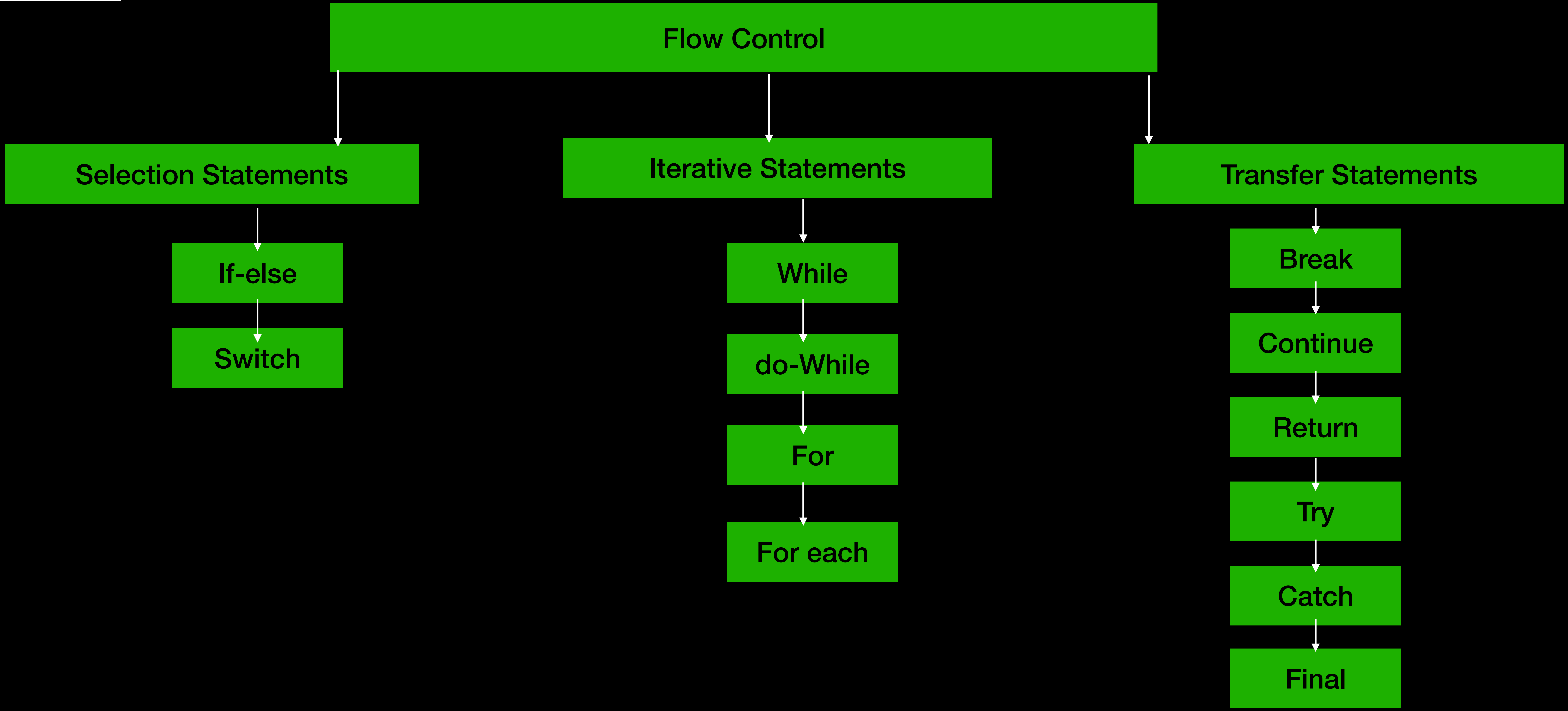
Array Operation

1. Insert

2. Search/Find

2. Search

Flow Control



Flow Control

If-else

The argument to the if statement should be boolean type , if we are providing any other we will get compilation error

Syntax

```
if(b){
    //Action if b is true
}else{
   // Action if b is false
}
```

Switch Statement

If several option are possible then it is never recommended to use if-else , we should go for switch

Syntax

```
Switch(x){
 Case 1 :
            //Action ;
 Case 2 :
            //Action ;
 Case 3 :
            //Action ;
     ............
     ............
  Default :
           Default Action ;
}
```

Before JAVA : 5	After JAVA : 5
byte	Byte
short	Short
int	Int
char	Char
	enum

In JAVA : 7

String

Flow Control

while

If we do not know the no of statement in advance then the best suitable loop is while loop

Syntax

```
while(rs.next()){
   //Logic
}
```

Flow Control

do while

If we want to execute loop body at least once then we should go for do-while

Syntax

```
do{
   //Logic
}while(b);
```

for loop

If we want to execute loop body at least once then we should go for do-while

Syntax

```
do{
   //Logic
}while(b);
```