Core Java

5. Control Flow

Control Flow

- Control Flow tells us the sequence of steps a program flows-through
- Control here refers to a step “controlling” the processor
- A program is a series of steps
- Control flows through those steps
- Can we have parallel control flows?

Program Execution

- In Java, all programs execute through a designated *Main* class
- *Main* class provides a *main()* function which can be invoked without creating an instance of the class
- In *Main*, we encounter a set of steps which are executed one after another
- A step is called a statement

Program Execution

- Do we always need *Main* classes?
- Some parts of Java allow you to write programs which can't usually execute by themselves
- But they can be invoked by other *Main* classes through specific mechanisms
- Examples are *Applets* and *EJBs*

Expression

- Basic unit of evaluation
- An expression is not a statement
- An expression basically is an assignment
- Compute things on the right hand side and assign them to left hand side
- Can chain assignments
- Use Numeric or Comparison operators on right side, and assign them to a compatible type on the left

Statement

- A simple statement is an expression followed by a semicolon *;*
- A complex statement consists of a set of simple statements within a pair of braces *{ }*
- Assignment statements contain variable type and multiple expressions
- Execution is right to left

Conditionals

```
if(expr) statement1
else if(expr) statement2
else statement3

expr ? Statement1: statement2

switch(expr) {
case val: statement1
default: statement2
}
```

Loops

```
while(expr) statement

do statement while(expr);

for(expr1;expr2;expr3) statement

for(a:arr) statement
```

Labels

```
labelname: statement
break [labelname];
continue [labelname];
return [expr];
```

Scope and Lifetime

- Scope is the set of statements through which a variable is accesible
- The scope of the variable fits within its lifetime

Demonstration

- Compile and Execute a few programs

Questions?