CSN-103: Fundamentals of Object Oriented Programming

Methods

- A self-contained block of statements that perform a coherent task of some kind
  - Also known as **Function** (*in different programming languages*)
  - Block of statements are executed only when method it is called
- Examples:
  - main()
  - println()
  - nextInt(), nextFloat(), nextLine()…
  - length(), chatAt(), …

Creating and Calling a Method

- Creating a method
  - Must be declared within a class
  - General Form

```
modifier returnType nameOfMethod (Parameter List)
{
    // method body
}
```

- Calling a method
  - Method's name followed by two parentheses () and a semicolon ;

```
nameOfMethod (Argument List);
```

Parameters, Arguments, and Return Type

- Parameters vs. Arguments

```
static int Add(int k, int l)
{
        int s = k+l;
        return s;
}
```

```
Add(i, j);

Add(3, 4);
```

- Return Statement and Return Type
  - **return** statement:
    - Immediately transfers the control back to the calling program
    - Return a **value** to the calling program
  - Return **type** should be same as the type of **value** returned

Call by Value and Call by Reference

- Parameters passing method
  - By Value: Values of arguments are copied to the parameters
    - Changes made inside functions are not reflected in arguments
    - All simple types variable are passes as Call By Value
  - By Reference: Both the arguments and parameters refer to same locations
    - Changes made inside functions are reflected in arguments
    - All *Objects* are passes as Call By Reference

- Scope of variables
  - Variables declared inside a method can't be accessed outside the method

Advantages

- Advantages of using a method
  - Avoids rewriting the same code over and over
  - Only runs when it is called
  - Easier to write/debug programs
    - Abstraction
    - Modularity

- **Procedural Programming**

Revisiting the main() method