**Lesson 6 – Programming Process**

* 5 Stages of the Programming Process
  + **Defining the Problem**
  + **Planning the Solution**
  + **Coding the Program**
  + **Testing the Program**
  + **Documenting the Program**
* **Defining the Problem**
  + Figure out how the layout of the program
    - What classes are required?
      * What attributes?
      * What services?
    - How are the classes related?
      * Inheritance?
      * Related?
  + The layout is done using a Class Diagrams

|  |
| --- |
| **ClassName goes here** |
| **Attributes**  e.g.  int street  Direction aDirection |
| **Services**  e.g.  Constructor  Query methods  Command methods |

* + A relationship between 2 classes is shown with an arrow
    - Fully enclosed arrow = Inheritance (“is a”)
      * One class inherits another class
    - Open ended arrow = Related (“has a”)
      * One class has an object of another class
* **Planning the Solution**
  + Every service needs an algorithm outlining how it will work
    - Two options for creating an algorithm
      * Flowchart
        + Visual representation of the flow of the program

Shapes and their representation

Oval = Start / End

Arrow = Program Flow

Rectangle = Process or some sort of command

Parallelogram = I/O interaction with user

Diamond = Decision

Circle with a number = Connector

Flag = Off-page Connector

* + - * Pseudocode
        + Logic structures but no programming syntax

No language specific terminology

* **Coding the Program**
  + Translate the algorithm into a formal programming language
* **Testing the Program**
  + Ways to test our program
    - Use the compiler to detect syntax errors
      * Translate source code to binary code
    - Debugging
      * Run the program using test cases
      * Detect logic errors and rectify them
        + Logic errors = Errors in the way the program works
* **Documenting the Program** -> Performed throughout development
  + Class Diagrams
  + Algorithms
  + Javadocs
  + Testing procedures
  + Help Menus
  + User’s Manual