Class Review: Terms & Concepts  
Deena Engel's V22.0002: Introduction to Programming

Introduction: Do you remember the old joke … “How do you get to Carnegie Hall?” … The punch-line is “Practice, practice, practice!” The same is true here. Reviewing the programs that we wrote and analysed in class; writing your own code; practicing programming at the computer; running programs and watching how variables change as the program runs … these are the primary tools which will help you to study and to prepare for the final exam … and beyond!

General

- syntax
- operating system
- programming language
- structured programming
- debugger
- trace
- /* comments in code */
- // more comments in code
- Import statements; why are they used? what do they do? name one example and why/when you would use it
- Blocks and {braces}: what do the braces do?
- What is a statement? (Note the ";" at the end.)
- Algorithm: what is it ? how is it used? Do they exist outside of programming and mathematics?
- What is the difference between (parentheses), {braces}, and [brackets]? Which ones do you use and when?

Variables

- variables
- data types: what are they? name at least 5. Which ones are used when?
- declarations
- initialization
- assignment
- = vs = = What is the difference?
- operators: name at least 11
- reserved words: what are they? name at least 5
- integer division: what is it and how is it used?
- operator precedence: what is it? how does it work?
- cast operator: what is it and how is it used?
- coercion: what is it? what is the problem with it?
- more operators: ++, --, +=, *=, etc. How are these used?
Errors

- We have seen examples of run-time errors, logic errors and compilation or syntax errors. Which are which? How do you fix them? How do you find them?

Control Structures

- Sequence structure: what is it? How do you describe this in Java?
- Selection structure: what is it? How is it used in Java?
- Repetition structure (aka "iterative structure"): what is it? Give examples in Java
- Boolean values: How can they be used in iterative structures?
- Nested statements: what are these? what does this imply? give examples
- if vs else if: which is which?
- logical operators: list at least five. How are they used? What are the results?
- switch: what is it and how is it used?
- break and continue: how/when are they used? give examples
- while loops: what are they and how are they used? What are the three required components for all while loops? Give examples.
- What is an infinite loop? Give an example.
- Define counter-controlled repetition and give an example.
- Define sentinel-controlled repetition and give an example.
- What is a do/while loop? Give an example
- What are the differences between a do/while loop and a while loop?
- What is a for loop? How is it used? give an example. What are the three components of a for loop?
- What are the advantages and disadvantages of for loops vs while and do/while loops?
- What do "nested loops" refer to?

Methods

- What is a method?
- What information is in a method header and what is the format?
- What information is included in a method signature?
- parameters: What is a parameter? What is the difference between formal parameters and actual parameters?
- What information is included in a parameter profile?
- What is the significance of a return value? Is there always a return value required?
- What does it mean to call or invoke a method?
- What does pass by value mean? How does it work? Describe how this is used in Java.
- What does pass by reference mean? Describe how this is used in Java.
- What is the difference between pass by value and pass by reference?
- What are local variables? Give an example.
- What does scope refer to?
- What is method overloading? How and why would it be used? Give an example.
- What are some examples of the "Math" methods we have used?
Arrays

- what is an array? how is it used? why is it used?
- Give some examples of declaring arrays. Which data types are supported?
- What are elements in an array? how are they referenced?
- How are subscripts used in an array? Which data type are they?
- What are some ways to assign values to arrays? to a single value in an array? to an entire array? give examples.
- What are array bounds? What should you look out for with respect to array bounds?
- How are arrays passed to methods? Give an example.

Send questions to deena@cs.nyu.edu with any questions.