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| **Understands Terms and Procedures:**  **11102** Classify the different steps and the files created when making a new executable file.  **11103** Identify and use the different data types in this programming language to manipulate data.  **11106** Plan and design a program using structured development techniques such as algorithms and pseudocode. |  |  |  |  |  |
| **Understands and Uses Math and Logical Operators:**  **11104** Use mathematical operators, comparison operators, and logical operators to solve business problems.  **11105** Recall the correct level of precedence for each of those operators. |  |  |  |  |  |
| **Understands and Uses Decision Making Structures:**  **11107** Use if and if/else selection structures to decide which actions to perform in a program.  **11109** Use the switch statement when making multiple decision selections. |  |  |  |  |  |
| **Understands and Uses Repetition Structures:**  **11108** Use repetition structures (while, do-while, etc.) to repeat a group of statements. |  |  |  |  |  |
| **Understands and Uses Methods:**  **11110** Explain why methods are a necessary component of modularizing Java programs.  **11111** Plan, design, create, and use methods in breaking down tasks to solve a problem.  **11112** Compare pass by value and pass by reference between methods. |  |  |  |  |  |
| **Understands and Uses Arrays of Different Types:**  **11113** Write valid programming statements to declare and initialize arrays, to refer to individual elements of an array, and pass arrays to functions.  **11114** Use and manipulate strings of characters, including the Standard Library string class. |  |  |  |  |  |
| **Understands and Uses Complex Data Types:**  Specify, define, implement, and use structures, enumerated and other user defined data types.  **11117** Specify, define, implement, and use simple classes. |  |  |  |  |  |
| **Design:**  **B1** Develop detail design specifications. |  |  |  |  |  |
| **Development:**  **C1** Create and modify new or existing system interfaces.  **C2** Create and modify new or existing code. |  |  |  |  |  |
| **Project Management:**  **F1** Define scope of project.  **F4** Estimate time requirements.  **F7** Evaluate project requirements. |  |  |  |  |  |
| **Debugging:**  **11116** Use the debugging tools available with the current compilers. |  |  |  |  |  |
| **Understands and Uses Complex and Dynamic Data Structures:**  Create and use dynamic data structures including but not limited to linked lists, stacks, queues, sets, maps, and trees.  **11101** Create and use pointers and dynamic memory allocation. |  |  |  |  |  |
| **Understands and Uses Recursion:**  Create and use recursion to solve problems. |  |  |  |  |  |
| **Problem Solving:**  **11115** Define the general scope of work to meet project requirements or solve a problem.  **H1** Define the problem.  **H3** Identify/test possible solutions.  **H5** Implement solution. |  |  |  |  |  |
| **Analysis:**  **A1** Be able to gather data to identify customer requirements.  **A2** Interpret and evaluate requirements.  **A3** Define scope of the work to meet customer requirements.  **A4** Develop high level systems and functional specifications. |  |  |  |  |  |
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