Concept Guide: Repetition Structures – code reusability

Course: CS 200

Introduction to Java Programming, Comprehensive Version, 11th ed. Text

Chapter: 5 Loops

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| Concept/Topic: | Text Notes: | Lecture Notes: |
| Review ofProgramming structures:Programming Rule # 01,Decision Structures |  |  |
| RepetitionStructures(AKA Loops) |  |  |
| Key Components to a RepetitionStructure: overview |  |  |
| startingvalue |  |  |
| conditional statement |  |  |
| body of the loop |  |  |
| MOE:**M**ethod**O**f**E**gress |  |  |
| infinite loop |  |  |
| pre-test loop |  |  |
| Best ChoiceLoop Syntaxwhen number of iterations is known |  |  |
| post-testloop |  |  |
| Best ChoiceLoop Syntaxwhen body of loop must be executed **at least once**. |  |  |
| Increment &DecrementOperators |  | (see sample source code) |
| Operator Precedence:Increment &DecrementOperators |  |  |
| Sentinel Values |  |  |
| Syntax:forloop |  | for (int i=0; i<10; i++) //starting value, test/conditional statement, MOE{//body of the loop} |
| Lab Time! |  | Use a repetition structureto display to the screen, only the odd values from 1-25 inclusive.**Flowchart,** then code using a “for loop.” |
| Syntax:whileloop |  | int x=0; //starting valuewhile (x<10) //test/conditional statement{//body of loopx++; //MOE} |
| Best ChoiceLoop Syntaxwhen loop stops on a sentinel value or number of iterations cannot be pre-determined |  |  |
| Lab Time! | Use this data as input:1,2,4,-17 | Use a repetition structureto sum all the positive integers entered by the user, until a negative integer value is entered. Display the sum & mean (average) of the positive integer list to the screen.**Flowchart,** then code using a “while loop.”Hint: do not add the negative value to your sum or average. |
| Syntax:do-whileloop |  | int x=0; //starting valuedo{//body of loopx++; //MOE } while (x<10) **;** //test/conditional statement |
| Lab Time! | Use this data as input for 4 runsa B c D !A A A ?b I r d 3&(Note: only enter 1 char at a time) | Use a repetition structureAsking the user for a single character input and then display if it is upper case, lower case, or non-alpha. If it is non-alpha the loop should terminate.**Flowchart,** then code using a “do-while loop.” |
| nested loops |  |  |
| Lab Time! |  | Use nested repetition structures to display a multiplication table from 1 -12 inclusive.Flowchart, then code using 2 “for loops”Hint: outer loop is for rows, inner loop is for columns, and use printf. |
| Lazy programming techniques with loops |  | NOT ALLOWED IN CS 200 – with loops:break continue |
| continue; |  |  |
| break; |  |  |