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CPS 150 02 – Algorithms and Programming 1

Lab 9

10/1/2020

**Program 1 Algorithm**

1. Start the program
2. Import the scanner
3. Prompt the user to enter their current grade
4. Declare a double variable to store the value of the user’s current grade
5. Declare a string variable to store the letter grade that will correspond to their current grade
6. Use if statements and the grading scale to decide what value should be assigned to the string variable for letter grade – for example, the first if statement should assign “A” to the letter grade variable if the user enters a grade greater than or equal to 94
7. Print out the user’s letter grade
8. End the program

**Program 1 Running Screenshot**

**Text

Description automatically generated**

**Program 1 Code**

/\*

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Lab 9

LetterGradeIfStatement: number; String

program takes in a value from the user for their current grade

and determines/prints out the letter grade the user will receive

using if statements

ex1: user inputs 93.4 - program outputs A-

ex2: user inputs 78 - program outputs C+

ex3: user inputs 101.65 - program outputs A

ex4: user inputs x - program outputs error

ex5: user inputs -12.2 - program outputs F

\*/

import java.util.Scanner;

public class LetterGradeIfStatement {

public static void main(String [] args){

//import scanner

Scanner input = new Scanner(System.in);

//prompt the user to enter their current grade and declare a double variable to store the value

System.out.print("Please enter your current grade: ");

double grade = input.nextDouble();

//declare a string variable to store the value of the user's letter grade

String letterGrade;

//use if statements to decide what letter grade to print out

if(grade >= 94){

letterGrade = "A";

}

else if(grade >= 90){

letterGrade = "A-";

}

else if(grade >= 87){

letterGrade = "B+";

}

else if (grade >= 83){

letterGrade = "B";

}

else if(grade >= 80){

letterGrade = "B-";

}

else if(grade >= 77){

letterGrade = "C+";

}

else if (grade >= 73){

letterGrade = "C";

}

else if(grade >= 70){

letterGrade = "C-";

}

else if(grade >= 60){

letterGrade = "D";

}

else{

letterGrade = "F";

}

//print out user's letter grade

System.out.println("Your letter grade is " + letterGrade);

}

}

**Program 2 Algorithm**

1. Start the program
2. Import the scanner
3. Prompt the user to enter their current grade – ask user to round to nearest integer because switch statements are unable to use doubles
4. Declare an int variable to store the value of the user’s current grade
5. Declare a string variable to store the letter grade that will correspond to their current grade
6. Use switch statements and the grading scale to decide what value should be assigned to the string variable for letter grade – for example, the first switch statement should assign “A” to the letter grade variable if the user enters a grade greater than or equal to 94
7. Print out the user’s letter grade
8. End the program

**Program 2 Running Screenshot**

**Text

Description automatically generated**

**Program 2 Code**

/\*

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Lab 9

LetterGradeSwitchStatement: number; String

program takes in a value from the user for their current grade

and determines/prints out the letter grade the user will receive

using switch statements

ex1: user inputs 93 - program outputs A-

ex2: user inputs 78 - program outputs C+

ex3: user inputs 101.65 - program outputs error

ex4: user inputs x - program outputs error

ex5: user inputs -12 - program outputs F

\*/

import java.util.Scanner;

public class LetterGradeSwitchStatement {

public static void main(String [] args){

//import scanner

Scanner input = new Scanner(System.in);

//prompt the user to enter their current grade and declare an int variable to store the value

System.out.print("Please enter your current grade rounded to the nearest integer: ");

int grade = input.nextInt();

//declare a string variable to store the value of the user's letter grade

String letterGrade;

//use switch statements to decide what letter grade to print out

switch(grade){

case 100, 99, 98, 97, 96, 95, 94:

letterGrade = "A";

break;

case 93, 92, 91, 90:

letterGrade = "A-";

break;

case 89, 88, 87:

letterGrade = "B+";

break;

case 86, 85, 84, 83:

letterGrade = "B";

break;

case 82, 81, 80:

letterGrade = "B-";

break;

case 79, 78, 77:

letterGrade = "C+";

break;

case 76, 75, 74, 73:

letterGrade = "C";

break;

case 72, 71, 70:

letterGrade = "C-";

break;

case 69, 68, 67, 66, 65, 64, 63, 62, 61, 60:

letterGrade = "D";

break;

default:

letterGrade = "F";

}

//print the user's letter grade

System.out.print("Your letter grade is " + letterGrade);

}

}