CPSC 236 – Selections and Loops

# You can work in pairs; however, each student needs to submit a copy, use the answer sheet to submit your code/screenshots.

# Project 3-1: Letter Grade Converter

Create a program that converts number grades to letter grades.

### Console

**Letter Grade Converter**

**Enter numerical grade: 90 Letter grade: A**

**Continue? (y/n): y**

**Enter numerical grade: 88 Letter grade: A**

**Continue? (y/n): y**

**Enter numerical grade: 80 Letter grade: B**

**Continue? (y/n): y**

**Enter numerical grade: 67 Letter grade: C**

**Continue? (y/n): y**

**Enter numerical grade: 59 Letter grade: F**

**Continue? (y/n): n Bye!**

**Specifications**

* The grading criteria is as follows:

|  |  |
| --- | --- |
| **A** | **88-100** |
| **B** | **80-87** |
| **C** | **67-79** |
| **D** | **60-66** |
| **F** | **<60** |

* Assume that the user will enter valid integers for the grades.
* The program should continue only if the user enters “y” or “Y” to continue.

# Project 3-2: Tip Calculator

Create a program that calculates three options for an appropriate tip to leave after a meal at a restaurant.

### Console

**Tip Calculator**

**Cost of meal: 52.31 15%**

**Tip amount: 7.85**

**Total amount: 60.16**

**20%**

**Tip amount: 10.46**

**Total amount: 62.77**

**25%**

**Tip amount: 13.08**

**Total amount: 65.39**

**Specifications**

* The program should calculate and display the cost of tipping at 15%, 20%, or 25%.
* Assume the user will enter valid data.
* The program should round results to a maximum of two decimal places.

# Project 3-3: Change Calculator

Create a program that calculates the coins needed to make change for the specified number of cents.

### Console

**Change Calculator**

**Enter number of cents (0-99): 99**

**Quarters: 3**

**Dimes: 2**

**Nickels: 0**

**Pennies: 4**

**Continue? (y/n): y**

**Enter number of cents (0-99): 55**

**Quarters: 2**

**Dimes: 0**

**Nickels: 1**

**Pennies: 0**

**Continue? (y/n): n Bye!**

**Specifications**

* The program should display the minimum number of quarters, dimes, nickels, and pennies that one needs to make up the specified number of cents.
* Assume that the user will enter a valid integer for the number of cents.
* The program should continue only if the user enters “y” or “Y” to continue.

# Project 3-4: Table of Powers

Create a program that displays a table of squares and cubes for the specified range of numbers.

### Console

**Table of Powers**

**Start number: 90**

**Stop number: 100**

|  |  |  |  |
| --- | --- | --- | --- |
| **Number** | | **Squared** | **Cubed** |
| **======** | | **=======** | **=====** |
| **90** | **8100** | **729000** | |
| **91** | **8281** | **753571** | |
| **92** | **8464** | **778688** | |
| **93** | **8649** | **804357** | |
| **94** | **8836** | **830584** | |
| **95** | **9025** | **857375** | |
| **96** | **9216** | **884736** | |
| **97** | **9409** | **912673** | |
| **98** | **9604** | **941192** | |
| **99** | **9801** | **970299** | |
| **100** | **10000** | **1000000** | |

**Specifications**

* The formulas for calculating squares and cubes are:

**square = x \*\* 2 cube = x \*\* 3**

* Use tabs to align the columns.
* Assume that the user will enter valid integers.
* Make sure the user enters a start integer that’s less than the stop integer. If the user enters a start integer that’s greater than the stop integer, display an error message and give the user a chance to enter the integers again.