**EBEC – Entry Level Programming**

**Week 8 – Programming Exercises**

1. **(20 points, Course Information)** Write a program that create a dictionary containing course numbers and room numbers of the rooms there the courses meet. The dictionary should have the following key-value pairs:

|  |  |
| --- | --- |
| Course Number (Key) | Room Number (value) |
| CS101 | 3004 |
| CS102 | 4501 |
| CS103 | 6755 |
| NT110 | 1244 |
| CM241 | 1411 |

The program should also create a dictionary containing course numbers and names of the instructors that teach each course. The dictionary should have the following key-value pairs:

|  |  |
| --- | --- |
| Course Number (Key) | Instructor (value) |
| CS101 | Haynes |
| CS102 | Alvarado |
| CS103 | Rich |
| NT110 | Burke |
| CM241 | Lee |

The program should also create a dictionary containing course numbers and the meeting times of each course. The dictionary should have the following key-value pairs:

|  |  |
| --- | --- |
| Course Numbers (key) | Meeting Time (value) |
| CS101 | 8:00 a.m. |
| CS102 | 9:00 a.m. |
| CS103 | 10:00 a.m. |
| NT110 | 11:00 a.m. |
| CM241 | 1:00 a.m. |

The program should let the user enter a course number, then it should display the course’s room number, instructor, and meeting time.

**Use the following numbers to test (Only type in the red numbers in interactive mode):**

|  |  |
| --- | --- |
| **Sample Input** | **Expected Output** |
| **Enter a course number: CS102** | **The details for course CS102 are:**  **Room: 4501**  **Instructor: Alvarado**  **Time: 9:00 am** |
| **Enter a course number: CS159** | **CS159 is an invalid course number.** |

1. **(40 points, File Analysis)** In the attachments, there are two files named “xian\_1.txt” and “xian\_2.txt”. Write a program that reads the contents of two text files and compares then in the following ways:
2. Write the unique words contained in “xian\_1.txt” and the frequency (the number of times each word appears.) of each word to file “word\_frequency\_1.txt”. The format in the text file should be:

Word: Frequency

walls: 5

the: 30

…

1. Write the unique words contained in “xian\_2.txt” and the frequency (the number of times each word appears.) of each word to file “word\_frequency\_2.txt”. The format in the text file should be:

Word: Frequency

walls: 5

the: 30

…

1. Write a list of the words that appear in both files to file “common\_words.txt”, one word per line.
2. Write a list of the words that appear in either the first or second file, but not both to file “eitherbutnotboth.txt”

**(Hint: you should remove the punctuation at the beginning and end of the words. Also, you should change all words to lower case.)**

**For this question, please submit the .py file along with the 4 text files. (word\_frequency\_1.txt, word\_frequency\_2.txt, common\_words.txt, eitherbutnotboth.txt)**

1. (**20 points**) In the attachments, there is a file named ‘WorldSeriesWinners.txt’. This file contains a chronological list of the World Series’ winning teams from 1903 through 2009. The first line in the file is the name of the team that won in 1903, and the last line is the name of the team that won in 2009. (Note the World Series was not played in 1904 or 1994.There are entries in the file indicating this.)

Write a Python program that reads this file and creates a dictionary in which the keys are the names of the teams, and each key’s associated value is the number of times the team has won the World Series. The program should also create a dictionary in which the keys are the years, and each key’s associated value is the name of the team that won that year.

The program should prompt the user for a year in the range of 1903 through 2009. It should then display the name of the team that won the World Series that year, and the number of times that teams has won the World Series.

**Use the following numbers to test (Only type in the red numbers in interactive mode):**

|  |  |
| --- | --- |
| **Sample Input** | **Expected Output** |
| **Enter a year in the range 1903-2009: 1953** | **The team that won the world series in 1953 is the New York Yankees.**  **They won the world series 27 times.** |
| **Enter a year in the range 1903-2009: 1994** | **The world series wasn't played in the year 1994** |
| **Enter a year in the range 1903-2009: 2008** | **The team that won the world series in 2008 is the Philadelphia Phillies.**  **They won the world series 2 times.** |
| **Enter a year in the range 1903-2009: 1900** | **The data for the year 1900 is not included in our database.** |

1. **(20 points, bonus questions**) Write a program that creates a dictionary containing the U.S. states as keys, and their capitals as values. (Use the Internet to get a list of the states and their capitals.) The program should then randomly quiz the user by displaying the name of a state and asking the user to enter that state’s capital. The program should keep a count of the number of correct and incorrect responses. (You need import random module in the program). When user enters 0, the quiz stops.

**Test your program with 10 quizzes and take the screenshot for all the results. Here is a sample of test. You should follow the format with random generated quizzes from your own code. (Only the red numbers should be typed in the interactive mode).**

|  |
| --- |
| **What is the capital of Ohio? (or enter 0 to quit): Columbus**  **That is correct.**  **What is the capital of Michigan? (or enter 0 to quit): Detroit**  **That is incorrect.**  **What is the capital of Idaho? (or enter 0 to quit): Boise**  **That is correct.**  **What is the capital of Washington? (or enter 0 to quit): Seattle**  **That is incorrect.**  **What is the capital of Delaware? (or enter 0 to quit): I do not know**  **That is incorrect.**  **What is the capital of New Hampshire? (or enter 0 to quit): Concord**  **That is correct.**  **What is the capital of Mississippi? (or enter 0 to quit): Jackson**  **That is correct.**  **What is the capital of Oklahoma? (or enter 0 to quit): 0**  **You had 4 correct responses and 3 incorrect responses.** |