15-112, Spring 2015

Assignment 5

Submission

You must submit one ZIP file on Autolab. This ZIP file must be named *userid*-hw5.zip and must include all of the Python files that you have written for this assignment. Please write your name and userid as a comment at the beginning of each Python file.

Recommendations

- **Make sure to test your program**.
- Make sure that your program is executable. If you are unable to complete portions of the assignment, comment out the part of the code that does not work properly, and explain what you did, what worked, and what did not. It is your responsibility to explain as carefully as you can why you think you were unable to get the code working, what you think is wrong, and how you might go about fixing it. The quality of such an explanation will be important to us in deciding whether to give you partial credit.

1 The spellcheker [40 points]

One of the renown technology company is designing a new phone and they are asking for your help to write a program that will verify whether text message are correctly spelled or not. When a text is wrongly spelled, the phone should show a report with the numbers of misspellings and the list of misspelled word.

Tip: the function `text2list`

The function `text2list(text)` takes a `text` (as `string`) and returns the list of words in `text`.

To get familiar with this instruction, try this snippet of code:

```
def text2list(text):
    return text.split(" ")

print text2list("This is a very cool tip")
print text2list("So Easy to use")
```

1.1 Checking the spelling of a word [20 points]

Write a function `check(text, words)` that takes a `text` (as `string`), a `words` list (as `string's list`), and returns the list of words in `text` that are not correctly spelled. A word is not correctly spelled if it is not in the `words` list.

- `text` is the text to spell check. We assume that this text does not contain any punctuation.
- `words` is the list of known words spelled correctly.

For instance, assuming that we have the following list of correctly spelled words:

```
myWords=["spelling","this","is","not","a","very","easy","hard","problem","impossible"]
```

```
check("spelling is not hard", myWords)
```
returns `[]`

```
check("this is a very easy porblem", myWords)
```
returns `['porblem']`

```
check("this problm is veri veri impossibru", myWords)
```
returns `['problm', 'veri', 'veri', 'impossibru']`

1.2 Spell report [20 points]

Write a function `report(text, words)` that takes a `text` (as `string`), a `words` list (as `string's list`), and returns a report (as `string`) mentioning the number of misspelled words and the list of misspelled words without any repetition.

- `text` is the text to spell check. We assume that this text does not contain any punctuation.
- `words` is the list of known words spelled correctly.

For instance, assuming that we have the following list of correctly spelled words:

```
myWords=["spelling","this","is","not","a","very","easy","hard","problem","impossible"]

report("spelling is not hard", myWords)
      returns "0 mistake"

report("this is a very easy porblem", myWords)
      returns "1 mistake:  porblem"

report("this problm is veri veri impossibru", myWords)
      returns "4 mistakes:  problm veri impossibru"
```


2 Grading [60 points]

We want to write a program that will calculate your course grade as described in:
`http://www.qatar.cmu.edu/~tsans/15112/`

2.1 Removing the minimum grade [20 points]

Write a function `removeMin(score)` that takes a `score` list (as a `number's list`), and returns a new score list the minimum value removed (only one occurrence of it).

- `score` is the list of scores (as `number`).

For instance,

```
removeMin([35, 30, 40, 40, 45, 50, 25, 25, 50])
      returns [35, 30, 40, 40, 45, 50, 25, 50]

removeMin([15,15])
      returns [15]

removeMin([100,100,80,80,100])
      returns [100, 100, 80, 100]
```


2.2 Calculating the final grade [20 points]

Write a function `grade(quiz, homework, project, exam, course)` that takes a `quiz` list, a `homework` list (both as `number's list`), a `project`, an exam (both as `number`), a `course` (as a `string`) and returns the final grade letter (as `string`) for the corresponding class. The letter grade returned should be either `"A"`, `"B"`, `"C"`, `"D"`, `"R"`.

- `quiz` is the list of scores for the quizzes (as `number`). We assume that there are 9 scores in this list.
- `homework` is the list of grades for the homeworks (as `number`). We assume that there are 9 scores in this list.
- `project` is the score for the project.
- `exam` is the score for the final exam.
- `course` is either "110" or "112". The final grade is different depending on which course the student is enrolled.

For instance,

```
grade([35,30,40,40,45,50,25,25,50],[100,120,90,110,70,115,130,124,97],230,170,"110")
```
returns `"A"`

```
grade([35,30,40,40,45,50,25,25,50],[100,120,90,110,70,115,130,124,97],230,170,"112")
```
returns `"B"`

```
grade([30,40,20,10,20,30,40,20,10],[80,86,75,50,30,50,60,80,95],180,150,"110")
```
returns `"D"`

```
grade([30,40,20,10,20,30,35,20,10],[100,100,100,100,100,100,100,100,100],230,150,"110")
```
returns `"R"`

2.3 Calculating the current grade [20 points]

This exercise is similar as the previous one except that we want to calculate the current grade assuming that we do not have all the scores yet. This means that we do not know how many quizzes and assignments have been completed so far. Neither we know if the project or final exam has been completed yet.

Write a function `forecast(quiz, homework, project, exam, course)` that takes a `quiz` list, a `homework` list (both as `number's list`), a `project`, an exam (both as `number`), a `course` (as a `string`) and returns the current grade letter for the corresponding class.

- `quiz` is the list of scores for the quizzes (as `number`). We assume that there are at least 2 scores in this list but we do not know how many exactly.
- `homework` is the list of grades for the homeworks (as `number`). We assume that there are at least 2 scores in this list but we do not know how many exactly.
- `project` is the score for the project. If the score is equal to `-1`, the grade should not been taken into account in the calculation.
- `exam` is the score for the final exam. If the score is equal to `-1`, the grade should not been taken into account in the calculation. .
- `course` is either "110" or "112". The final grade is different depending on which course the student is enrolled.

For instance,

```
forecast([35, 30, 40, 40],[100,120,90], -1,-1,"110")
```
returns `"A"`

```
forecast([35, 30, 40, 40],[100,120,90], -1,-1,"112")
```
returns `"B"`

```
forecast([30, 40],[80,86,75,50],180,-1,"110")
```
returns `"C"`

```
forecast([30, 30, 20, 10],[100,100],230,120,"110")
```
returns `"R"`

