CSC1015F Assignment 5

Strings

Assignment Instructions

This assignment involves constructing Python programs that use input and output statements, '`if`' and '`if-else`' control flow statements, '`while`' statements, '`for`' statements, and statements that perform `string` manipulation.

String concepts: string, index, int(), str(), find(), strip(), slice, concatenation, iteration over.

NOTE Your solutions to this assignment will be evaluated for correctness and for the following qualities:

- Documentation
  - Use of comments at the top of your code to identify program purpose, author and date.
  - Use of comments within your code to explain each non-obvious functional unit of code.
- General style/readability
  - The use of meaningful names for variables and functions.
- Algorithmic qualities
  - Efficiency, simplicity

These criteria will be manually assessed by a tutor and commented upon. In this assignment, up to 10 marks will be deducted for deficiencies.

Question 1 [25 marks]

Students who enter university are often shocked to learn that they need to provide references in all their written work (and even programs). A common mistake is using the wrong format or, even worse, using inconsistent formats in the list of references. This can lead to violent reactions from your lecturer or even the loss of precious marks! Fortunately, this can be remedied with a simple program to reformat references to be consistent.

Write a program called '`references.py`' to reformat references as follows:

- The author names are in title case.
- The title has only the first letter capitalised and,
- The rest remains the same.

Assume that the input reference format is: *a list of authors, space, (year), space, title, comma, other information.*

Hint: You will need to use string manipulation functions such as: `find, title, capitalize, replace, [:]` (slicing).

Sample IO *(The input from the user is shown in* ***bold*** *font – do not program this*):

```
Enter the reference:
```
poulo, lebeko bernard (2013) fine-grained scalability Of digital library services In The cloud, SAICSIT Conference 2014, ACM, pp23-34, 2014
```
Reformatted reference:
Poulo, Lebeko Bernard (2013) Fine-grained scalability of digital library services in the cloud, SAICSIT Conference 2014, ACM, pp23-34, 2014
```

Sample IO *(The input from the user is shown in* ***bold*** *font – do not program this*):

```
Enter the reference:
```
suleman, h (2001) Some Random Piece Of Junk, Journal of Junk, ACM, pp1-100, 2000.
```
Reformatted reference:
Suleman, H (2001) Some random piece of junk, Journal of Junk, ACM, pp1-100, 2000.
```

Sample IO *(The input from the user is shown in* ***bold*** *font – do not program this*):

```
Enter the reference:
```
POULO, lebeko bernard (2013) fine-grained scalability Of digital library services In The cloud, SAICSIT Conference 2014, ACM, pp23-34, 2014
```
Reformatted reference:
Poulo, Lebeko Bernard (2013) Fine-grained scalability of digital library services in the cloud, SAICSIT Conference 2014, ACM, pp23-34, 2014
```

Question 2 [25 marks]

This question concerns transforming a date and time given in a compact 24-hour format to a long form 12-hour format.

Write a program called '`convert.py`' that accepts as input, a date and time in the form yyyy-mm-dd hh:mm, and outputs the same information in the following long form: the time expressed as 12 hour clock, followed by the words 'on the' followed by the day of the month with appropriate suffix ('st', 'nd', 'rd', or 'th'), followed by the word 'of' followed by the month name, followed by the year expressed as two digits preceded by an apostrophe.

Sample IO *(The input from the user is shown in* ***bold*** *font – do not program this*):

```
Enter the date and time (yyyy-mm-dd hh:mm):
2021-04-09 04:33
4:33 am on the 9th of April '21
```

Sample IO *(The input from the user is shown in* ***bold*** *font – do not program this*):

```
Enter the date and time (yyyy-mm-dd hh:mm):
2000-11-23 23:15
11:15 pm on the 23rd of November '00
```

HINT:

- Slice out the parts.
- Use if statements to (i) select the time suffix (am/pm), (ii) the day suffix ('st', 'nd', 'rd', or 'th'), and the month name (January, …, December).
- Treat midnight as 'am' and midday as 'pm'.
- The value of the expression `int('0006')` is the integer `6`.

Question 3 [25 marks]

Write a program called '`breakup.py`' that accepts a sentence as input and that outputs it as a comma-separated list of lowercase words with a full-stop at the end.

Sample IO *(The input from the user is shown in* ***bold*** *font – do not program this*):

```
Enter a sentence:
Jerusalema ikhaya LAMI
The word list: jerusalema, ikhaya, lami.
```

Sample IO *(The input from the user is shown in* ***bold*** *font – do not program this*):

```
Enter a sentence:
The Quick Brown Fox Jumped Over The Lazy Dog
The word list: the, quick, brown, fox, jumped, over, the, lazy, dog.
```

HINT

- To make a comma separated list, you should treat the first item as a separate case before looping for subsequent items i.e. get the first word and print, then for each subsequent word, print a comma and space then the word.
- To extract a word at a time, use '`find()`' to look for the next space.
- Keep breaking down the sentence into the first word and the rest of the sentence. The rest of the sentence becomes the whole sentence for the next iteration.

NOTE

- Please ensure that your solution ONLY uses Python features introduced in lectures.
- Do not use the `replace()` function in your code. This will attract a penalty.

Question 4 [25 marks]

Write a Python program called '`pig_latin.py`' that accepts a sentence as input and translates it to a variant of Pig Latin (see: http://en.wikipedia.org/wiki/Pig_Latin).

To convert from English to Pig Latin, each word must be transformed as follows:

- if the word begins with a vowel, 'way' should be appended (example: 'apple' becomes 'appleway')
- if the word begins with a sequence of consonants, this sequence should be moved to the end, prefixed with 'a' and followed by 'ay' (example: 'please' becomes 'easeaplay')

Sample IO *(The input from the user is shown in* ***bold*** *font – do not program this*):

```
Enter a sentence:
The quick black fox jumps over the lazy apple
eathay uickaqay ackablay oxafay umpsajay overway eathay azyalay
appleway
```

HINT

- Draw on your answer to question two.
- The Python expression `'a' in 'aeiou'` is `True`, while the expression `'b' in 'aeiou'` is `False`.

NOTE

- Input may be a mix of upper and lowercase letters. Output must be all lowercase.
- Please ensure that your solution ONLY uses Python features introduced in lectures.

Submission

Create and submit a Zip file called '`ABCXYZ123.zip`' (where ABCXYZ123 is YOUR student number) containing `references.py`, `convert.py`, `breakup.py` and `pig_latin.py`.

NOTES:

1. FOLDERS ARE NOT ALLOWED IN THE ZIP FILE.
2. As you will submit your assignment to the Automarker, the Assignment tab may say something like "Not Complete". THIS IS COMPLETELY NORMAL. IGNORE IT.