National University of Singapore

Faculty of Law (2024-2025)

LC2017: Law and Technology

Coding Exercise (Week 5): Python – Expressions, Numbers, Strings, Booleans, Variables, Input/Output and Conditionals

This is a graded Python coding exercise, comprising 25% of your overall grades for this course.

Write Python 3.12.x+ code for all parts of the following question. Each part of the question carries 5 marks, with 5 additional marks for good coding style. Note that the *italicized words/phrases* are placeholders.

1. As the senior associate in your firm's IP department, your partner has instructed you to assist him to renew the clients' patents, pursuant to Rule 51(1) of the Patents Rules, which reads:

   > If it is desired to keep a patent in force for a further year or part thereof after the expiration of the fourth or any succeeding year from the date of filing an application for that patent … an application for its renewal, in respect of the next succeeding year, accompanied by the prescribed renewal fee for that year, shall be filed in the 3 months ending with the fourth or, as the case may be, succeeding anniversary of the date of filing.

   For each patent, the partner will issue the renewal instructions in the following format (the "correct format"). Note the *italicized words/phrases* placeholders:

   clientname, *uen*, *patent_application_no*, *next_succeeding_year*

   Note that for the correct format, after each comma, there is a space followed by a corresponding value.

   The following is a sample of two such instructions in the correct format:

   Novartis AG, 200707750D, 11202403419U, 6

   Google LLC, 200703572R, 11202105629S, 12

   For instance, for the first instruction, Novartis AG *(*UEN[1] 200707750D) is seeking to renew its Patent Application No 11202403419U to its sixth year. Thus, *clientname* is Novartis AG, its *uen* is 200707750D, its *patent_application_no* is 11202403419U and its *next_succeeding_year* is 6.

   (a) (i) Prompt the user to input an instruction in the above format.

   (ii) The input in (i) above has to use the following exact prompt only (and no others):

   ```
   Enter instruction: clientname, UEN, patent_application_no, next_succeeding_year
   ```

   (iii) Save this input in the variable `instruction`.

   (b) (i) Verify that the variable `instruction` is in the correct format by extracting the client name, uen, patent application number and the next succeeding year from the variable `instruction`.

[1] UEN stands for Unique Entity Number, and is an alphanumeric sequence that uniquely identifies a business.

(ii) Save the extracted values into the variables `clientname`, `uen`, `patent_application_no` and `next_succeeding_year` respectively.

(iii) If the variable `instruction` is not in the correct format, print this exact message:

```
Can't process! Your instruction is not in the correct format!
```

and do no further processing (in other words, skip (c) and (d)).

(c) To renew a patent to the `next_succeeding_year`, the renewal fee(s) for each succeeding year up to (and including) the `next_succeeding_year` has/have to be paid.

(i) Using the value of the variable `next_succeeding_year` and based on Matter 20 in the First Schedule of the Patents Rules (reproduced below), calculate the total costs of renewal of the patent (by adding the renewal fees for each succeeding year up to (and including) the `next_succeeding_year`)

Payment of renewal fee:	S$
for each year in respect of the 5th, 6th or 7th year of the patent	165
for each year in respect of the 8th, 9th or 10th year of the patent	430
for each year in respect of the 11th, 12th or 13th year of the patent	600
for each year in respect of the 14th, 15th or 16th year of the patent	775
for each year in respect of the 17th, 18th or 19th year of the patent	945
for the 20th year of the patent	1,120
for each year after the 20th year of the patent	1,380

For instance, if `next_succeeding_year` is 6, this means that the `total_renewal_fee` is S$330 (being S$0 for the 1st, 2nd, 3rd and 4th years, S$165 for the 5th year and S$165 for the 6th year.

(ii) Save the calculated total cost of renewal into the variable `total_renewal_fee`.

Note that:

- Renewal fees for the 1st, 2nd, 3rd and 4th years are zero.
- Although patent term extensions beyond 20 years exist, in practice, they are rare.

(d) Before you can complete Parts 1 to 5 of Patents Form 15, using all the variables above, print the following correspondence (in 2 separate lines) with this template to obtain your client's confirmation to effect the patent renewal. Note the *italicized words/phrases* placeholders:

Dear counsel for *clientname* (*uen*):

Please confirm by 15 Sep 2024 that your patent *patent_application_no* is due to be renewed to year *next_succeeding_year*, for a total cost of S$*total_renewal_fee*.

For instance, for the first instruction, following the template above, the correspondence to be printed should read (in 2 separate lines):

> Dear counsel for Novartis AG (200707750D):
> Please confirm by 15 Sep 2024 that your patent 11202403419U is due to be renewed to year 6, for a total cost of S$165.00.

Note that:

- *clientname*, *uen*, *patent_application_no*, *next_succeeding_year* and *total_renewal_fee* in the template above are placeholders for the values of the corresponding variables.
- Express the *total_renewal_fee* in both dollars and cents. For example, if the total renewal fee is $100, this should be expressed as $100.00. (If need be, you may use the necessary operators and functions on the value in the variable *total_renewal_fee*.)

Your script has to be able to process any instruction in the correct format, and not just the samples shown above.

Hints:

ⓘ You *may* use conditional `if` statements to parse the variable `instruction` and extract `clientname`, `uen`, `patent_application_no` and `next_succeeding_year` from this variable.

ⓘ You *may* use conditional `if` statements to calculate the `total_renewal_fee`.

Instructions:

You may download the template CodingExercise.py from Canvas and work on that on your Python IDE. However, you have to rename this file e#######.py or any answer on your Python IDE with the filename e#######.py, where e####### corresponds to your student ID. For instance, if your student ID is e1234567, please upload your answer as the file:

e1234567.py

A failure to do so will result in a failure of the system to process your answer and significantly delay the process of marking your answer and attributing the marks to you.

To constitute a valid submission, please upload this file onto Canvas. If there is no acknowledgement of your submission from Canvas, you are not considered to have made a valid submission. The status of your submission will be absolutely determined by Canvas.

Do note that as this is a graded exercise, the NUS Code of Student Conduct will apply not just to you and your submissions, but also to your classmates' submissions. So please do NOT post or share any code. As per the NUS Policy for Use of AI in Teaching and Learning, while AI use is permitted and correspondingly, attribution is required in your answer (by placing this attribution in the form of multiline comments in your answer and identify the AI tool used, provide the Prompt and output and explain how the output is used in your exercise – see section 4.3), you are advised that AI tools are not always accurate or reliable, and you are fully responsible for all consequences arising from their use.

For instance, please provide the following multiline comment in your code if you were to use an AI tool:

```
"""
AI Tool Used: ChatGPT
Prompt: in Python how do I replace part of a string
Output:
In Python, you can replace part of a string …
How the output is used in the exercise:
I used the third code sample to …
"""
```

If any plagiarism is detected, including a failure to attribute AI use, you will be asked to justify your coding. If it is shown that you have plagiarized code contrary to the instructions here, you will receive no grade for all or part of this entire exercise.

Yours sincerely,

A/P Daniel Seng

September 1, 2024

for tutors of LC2017