Data Structures
Homework #1

Due: Mar 22, 2021

This assignment is to practice Python programming. There are five problems and please finish each problem right after the problem description in the `HW1.ipynb` file that is provided on the **i-school(Plus)** (https://istudy.ntut.edu.tw/learn/index.php) platform. More details about each problem are also in the `HW1.ipynb` file.

1. Write a short Python function `sumevensquares()` that takes a positive integer n and returns the sum of the squares of all the even positive integers smaller than n. Furthermore, please give a single command that computes the same sum in another Python function `sumevensquares_simple()`, relying on Python's comprehension syntax and the built-in `sum` function.

2. Given a sequence of integer values, determines if there is a distinct pair of numbers in the sequence whose product is odd. Please provide two Python functions, `oddpair_bf()` and `oddpair_linear()` for this problem. The function will take the given sequence of integers as a list. The `oddpair_bf()` function uses a brute-force approach and checks the possible pairs sequestially. When there is pair whose product is odd, it returns **True**; otherwise, it reports **False**. The second one, `oddpair_linear()`, uses a linear-scan approach and will visit each element once. Pleace have a way to determine this with a linear-scan.

3. Demonstrate how to use Python's `list` comprehension syntax to produce the list [0, 2, 6, 12, 20, 30, 42, 56, 72, 90]. Please use a `generator` to create an iterator and then make the resulting list(an iterable).

4. Write a Python class named `Triangle` constructed by three sides a, b, c with two methods: `area()` and `perimeter()`, which compute the area and perimeter respectively. For this problem, we simply use a list to store the three sides.

5. Write a short Python function, `remove_punctuation()` that takes a string s, representing a sentence, and returns a copy of the string with all punctuations removed. For example, if given the string "`Let's try, Mike.`", this function would return "`Lets try Mike`".

Homework Submission

- Please upload the completed `.ipynb` file with the filename as `HW1_studentID.ipynb` to **i-school(Plus)** (https://istudy.ntut.edu.tw/learn/index.php).

- The **deadline** is the **midnight of march 22**, 2021 and **Late work** is not acceptable.

- Honest Policy: We encourage students to discuss their work with the peer. However, each student should write the program or the problem solutions on her/his own. Those who copy others work will get 0 on the homework grade.