Solving simple problems with Python

Objectives

Using Python to solve simple problems

- Implement simple programs using Python
- Solve simple problems using read/write instructions, conditional, loops
- Implement functions, use test-driven development, treat exceptions

Requirements

1. Write an application to deal with all of the requirements below.
   Implement functions to read data, process data and display output results. Use procedural programming and feature-driven development. Write functions and test them using assertions.

   The application should allow:

   a. Create a list of natural numbers
   ex. my_list =[5, 9, 14, 7]

   b. Display a list of natural numbers

   c. Determine the sum of elements from the list which are perfect squares
   ex. my_list = [5, 9, 4, 7], then sum is 13 = 9 + 4

   d. Filter the elements from the list which are not perfect squares
   ex. my_list = [5, 9, 4, 7], then result_list = (5, 7)

   e. Delete from the list the sequence starting from the first perfect square to the last perfect square in the list.
   ex. my_list = [5, 9, 4, 7] becomes [5]

   f. Shift to the beginning of the list the longest sequence of perfect squares
   ex. my_list = [5, 9, 4, 7, 16, 36, 4, 6], then result_list = [16, 36, 4, 5, 9, 4, 7, 6]

2. Write an application to manage a list of students. Each student has an id (int), a name (string) and a grade (int). The application should provide a menu type interface.