COMPUTING LAB - II
ADVANCED SYSTEM SOFTWARE LAB - CSE 5261
MTech - CSE
Week - 3 Basics of Python Programming

Lab Exercises:

1) Write a class called Investment with fields called principal and interest. The constructor should set the values of those fields. There should be a method called value_after that returns the value of the investment after n years. The formula for this is $p(1 + i)^n$, where p is the principal, and i is the interest rate. It should also use the special method __str__ so that printing the object will result in something like below:

Principal - $1000.00, Interest rate - 5.12%

2) Write a class called Password_manager. The class should have a list called old_passwords that holds all of the user's past passwords. The last item of the list is the user's current password. There should be a method called get_password that returns the current password and a method called set_password that sets the user's password. The set_password method should only change the password if the attempted password is different from all the user's past passwords. Finally, create a method called is_correct that receives a string and returns a Boolean True or False depending on whether the string is equal to the current password or not.

3) Write a class called Wordplay. It should have a field that holds a list of words. The user of the class should pass the list of words they want to use to the class. There should be the following methods:
- words_with_length(length) — returns a list of all the words of length length
- starts_with(s) — returns a list of all the words that start with s
- ends_with(s) — returns a list of all the words that end with s
- palindromes() — returns a list of all the palindromes in the list
- only(L) — returns a list of the words that contain only those letters in L
- avoids(L) — returns a list of the words that contain none of the letters in L

4) Write the regular expressions in Python for the following:
i) To replace all occurrences of abc with *.(Eg:- 'abcdef' replace to ('abc','*')
ii) To convert roman numerals into ordinary numbers.
iii) To recognize the strings: "bat," "bit," "but," "hat," "hit," or "hut."
iv) That converts to lowercase every capital letter that is followed by a lowercase letter.

5) Write the functions in Python to sort a list of strings by length, rather than alphabetically.

6) Write a program in Python, that removes single and multiline comments from a given input 'C' file.

7) Write a program in Python, that takes a file as input and replaces blank spaces and tabs by single space and writes the output to a file.

8) Write a program in Python, to match the set of all valid Python identifiers.

Additional Exercises:

1) Use the Standard_deck class of this section to create a simplified version of the game War.In this game, there are two players. Each starts with half of a

deck. The players each deal the top card from their decks and whoever has the higher card wins the other player’s cards and adds them to the bottom of his deck. If there is a tie, the two cards are eliminated from play (this differs from the actual game, but is simpler to program). The game ends when one player runs out of cards.