210CT Week 3 Coursework Tasks
Dr. Diana Hintea

LEARNING OUTCOMES

1. Understand recursion: base case, how we ensure we get to the base case and the concept of a function calling itself.
2. Understand the principles behind working with string based algorithms.
3. Reason about the complexity of algorithms and apply the BigO notation in doing so.

BASIC/INTERMEDIATE TASKS

1. Write the pseudocode and code for a function that reverses the words in a sentence. Input: "This is awesome" Output: "awesome is This". Give the Big O notation.
2. Write a recursive function (pseudocode and code) to check if a number n is prime (hint: check whether n is divisible by any number below n).
3. Write a recursive function (pseudocode and code) that removes all vowels from a given string s. Input: "beautiful" Output: "btfl".

ADVANCED TASK

1. Consider having n cubes, each being characterized by their edge length and their colour.
   Use the cubes (not necessarily all of them) in order to build a tower of maximum height, under the following conditions:
   a) Any two neighbouring cubes must be of different colours.
   b) The edge length of a cube is lower than the edge length of the cube placed below it.
   Write both the pseudocode and the code.

READING

Jokinen P., Tarhio J., Ukkonen E. (1988). A Comparison of Approximate String Matching Algorithms. *Software – Practice and Experience,* Vol. 1, Issue 1, pp. 1-4.