Programming Paradigms Lab Assignment (CS 2273)

Assignment 2 (Part 2) : Basic C++ Concepts

Time : One week

Continuation from Assignment 2 (Part 1)

Attempt the following ONLY when Assignment-2-Part-1 problems are completed

6. Modify the code of Problem 2 (keep the code of problem 2 unchanged) and apply the concept of template function to demonstrate that different `RuntimeSizeArray` instances can be created for different data types, such as `int, float, struct` etc. However, understand that it cannot be instantiated for `string (char *)` data types.

7. Modify the Problem 2 (keep the code of problem 2 unchanged) in such way (without using template function) that different `RuntimeSizeArray` instance can be created for different data types, such as `int, float, struct` and `string(char *)`.

8. Modify the code of Problem 5 (keep the copy of problem 5 unchanged) with following enhancements:
   i) Before every iteration of the eviction process, the specified number of people (S) to be skipped is calculated based on an arbitrary function f(x) (where S = f(x)). For example, $f(x) = (x^3 – 2x^2 + 4x – 1)$ or $f(x) = (x^2 – 3x + 6)$ where x is a natural number selected randomly.
   ii) Provide a mechanism that in every iteration, the value of (specified number of people) S is calculated using a randomly chosen function among a set of given functions – $f_1(x)$, $f_2(x)$, $f_3(x)$ …, $f_m(x)$. Make sure these set of functions are encapsulated/hidden in a module, so that client code does not get a clue on selection of function.
   iii) If the calculated S is a positive number, then direction of proceeding around the circle is clockwise, otherwise it is anticlockwise.