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CSCI 301-Section 1

#cs301175

Project 7

**Summary**

The program creates a stack object then creates an integer variable and asks the user to input the integer the user want to know its prime factors, then it passes the value entered by the user as a parameter to the function which will perform the calculation then prints out all the prime factors of the integer found by the function and stored in the stack. This process keeps repeating until the user ends the program.

Stacks are data structures that hold items one over the other. This program uses a Stack ADT implemented in sequential method using array. This program determines all the prime factors of a given integer using stack data structure and recursion technology.

The program can be extended in many ways, we can add functions that allow printing the prime factors in an ascending order or we can use different data structures like Linked Lists or Queues to store the items.

**Discussion Question:**

If we wanted to report each integer's prime factors in increasing order, would the stack be necessary or helpful?

**Answer:** Stack in this situation will be helpful but not necessary, stacks save items one over the other with the new items placed at the top and be the first to be popped out of the stack if needed, and from the function we are using to get the prime factors; the function gets the smaller prime factors first then the larger ones, when we print the items stored in the stack the larger prime factors get printed first. So, because of the stack nature it won’t be necessary to be used, actually Queue data structure will be a better option.