

Programming 2g Worksheet

Note: Do not use arrays from week 3 to solve any of the problems

Problem

1. **Scenario:** Inside a loop a user enters a single number, one at a time. This is added to a sum value. Once the sum exceeds 20 the program exits the loop. How would this be coded? What type of loop is the right one to use? What is the right mechanism to check the sum and exit? Write a small program that attempts to solve this problem. One of the issues is that the exit condition is connected to a calculation based on the input.
 - a. **Variation 1:** Before entering the loop the user enters an **upper limit**. Scenario 1 is then repeated with the following change: Inside the loop, the user enters a single number, one at a time. This is added to a sum value. Once the sum exceeds the **upper limit** the program should exit the loop. But, instead of simply exiting the program the user is asked a question: “do you wish to increase the upper limit?” If the user wants to increase the upper limit the program asks the user to specify the amount to add to the upper limit. This is added to the upper limit and the program continues until the new upper limit is reached. The user is not asked a second time to increase the upper limit. How would you code this variation?
 - b. **Variation 2:** Expand variation 1 as follows: Every time the user inputs a number it is only added to the sum if it is a prime number.
 - c. **Variation 3:** The number is added to the sum if it is not a factor of the sum.