Understanding the Problem

This assignment is asking me to make two programs that do two separate things.

The first program is asking me to make a program that will display a fractal to the terminal depending on the largest element in the fractal and the spaces from the side of the terminal. The function call in the example shows pattern(3,2) which displays a fractal with the largest row containing 3 stars and is spaced 2 spaces from the side of the terminal.

The second program is asking me to create a linked list class while analyzing the complexity of my algorithm. I need to define from scratch some of the functions that are popular in STL for linked lists. The linked list that I am tasked to create will be of signed integers type **int.**

Input/Output
For the pattern section the user will input 2 integers and it will be assumed that they will enter an odd integer with any other positive integer.

Output for the pattern with just be the pattern

For the linked list program I need to create a linked list class and a node class with functions to determine length, add elements, move elements in the list, sort the list from descending or ascending order, and count the prime numbers of the list. I will set this up to that the user can have a menu to choose these functions

Output. The list needs to be printed to the terminal correctly.

Subtasks

I will need to create functions for the linked list for the purposes mention in the input linked list section. I will also need to create the menu interface for the user to choose functions.

Program Design

Pseudocode

Print the menu
Get input for the option the user desires
Call the correct function for that
Maybe print another menu depending on the first option chosen (like add x elements to the new linked list).

***linked list class file
Define linked list
Private:
Unsigned int length;
Node* head;
Public:

Int get_length()
Other accessors
Many other functions

Variables to create:

I will need to create the variables in both classes for the size of the linked list, a pointer to the head of the list and size of the list.

Decisions:

I need to decide how I will implement basic functions that are already defined in STL which means researching what the functions do on a fundamental level. I will need to decide what I want my programs interface to look like and how the pattern function will work exactly.

Functions to handle simple error checking will be extremely useful. Functions to dynamically create, sort, and print data will be made as well and utilized heavily.

Prompt	Input	Output
What would you like to do //prints list	45	Please enter a number between 1 and n
What would you like to do?	2	Goes to create a linked list for the user to modify
Inside linked list what would you like to do? //Prints linked list commands	2	What elements would you like to add?
What elements would you like to add?	456	Adds 456 to the end of the list
Inside linked list what would you like to do?	1	Deletes the entire list and returns to main menu