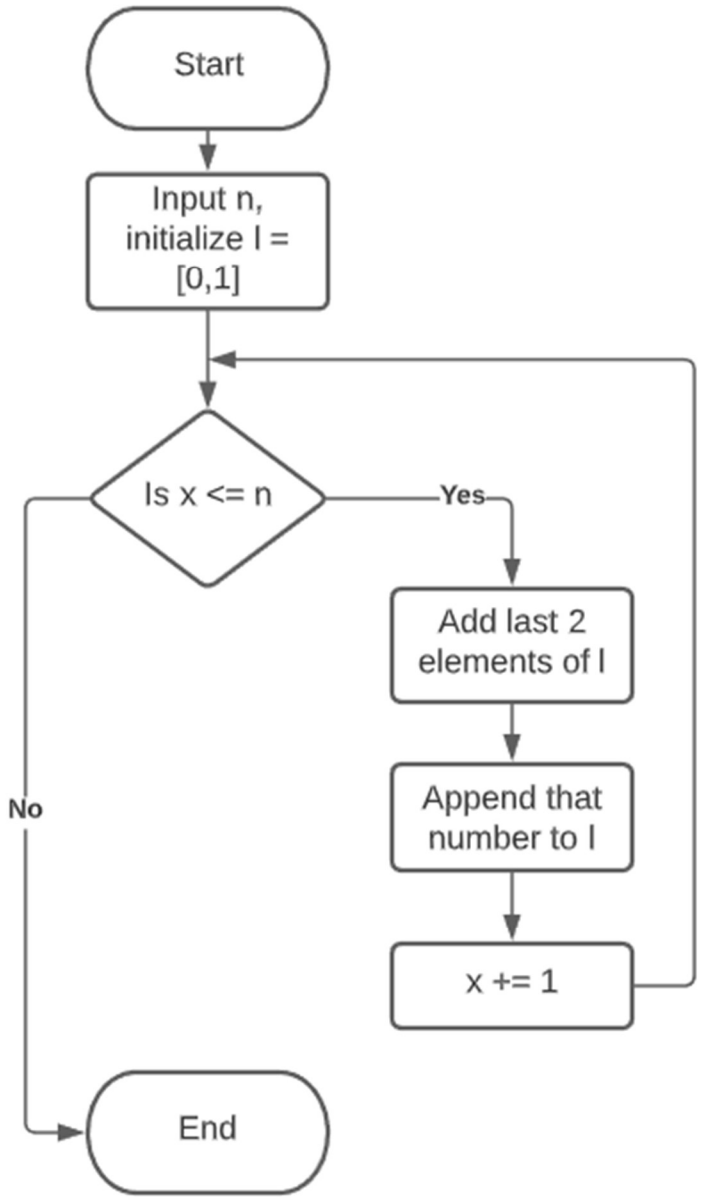
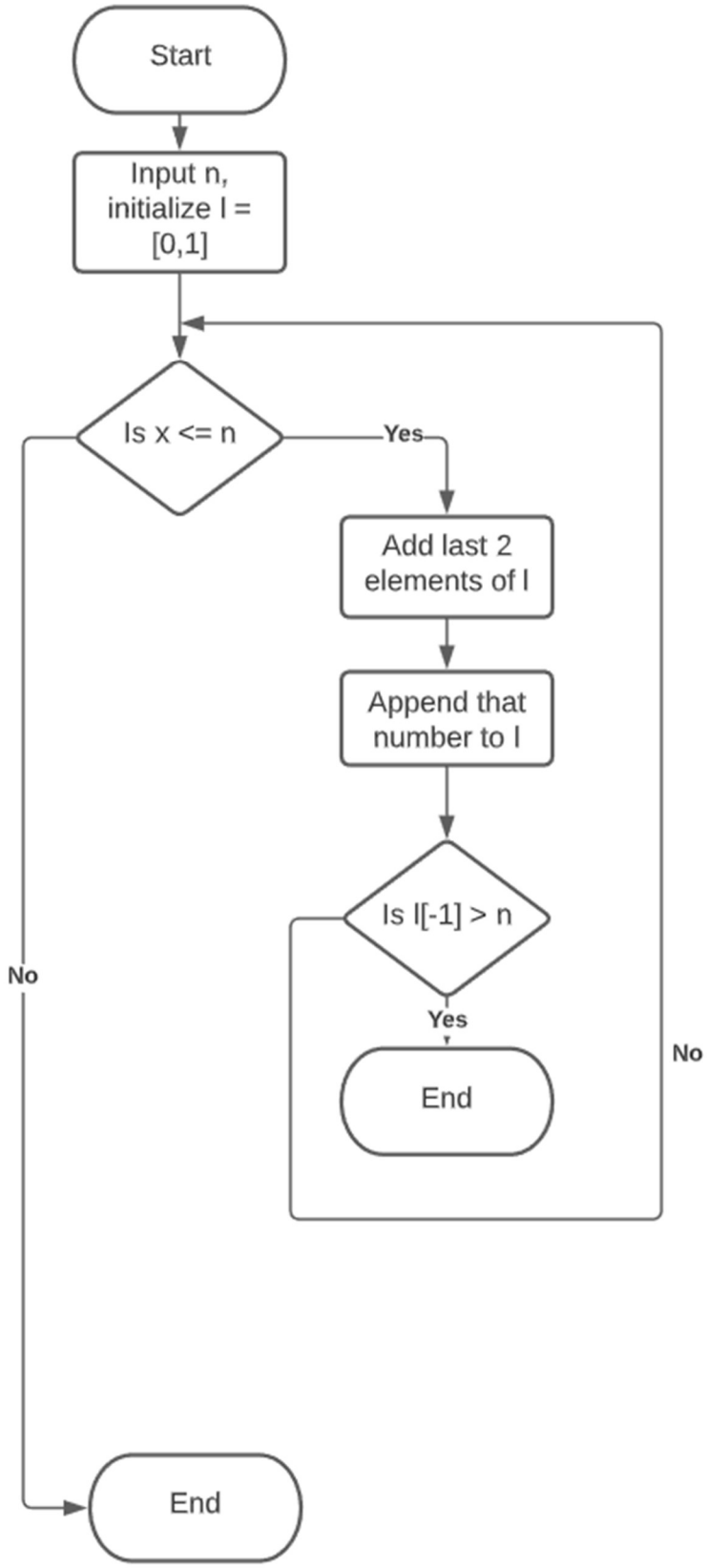
Task 1:

Part A:


Start
Input n, initialize l = [0,1]
Is x <= n
Yes
No
Add last 2 elements of l
Append that number to l
x += 1
End

Part B:


Start
Input n, initialize l = [0,1]
Is x <= n
Yes
No
Add last 2 elements of l
Append that number to l
Is l[-1] > n
Yes
No
End
End

Task 1B Questions:

1) Use for loops when the number of iterations is known, and use while loops when only the condition is known

2) While loops only include a condition, and variables are altered in the body of the loop to keep the while loop going. For loops have the number of iterations at the top and the potential conditions are in the body of the loop.

3)While loops check if a condition is met then execute the body of the loop while that condition is true, and for loops run for a given number of iterations with the potential conditional statements in the body.

4)For loops terminate when all the given iterations have been executed, and while loops terminate when the initial condition is not met. Both loops will terminate if 'break' is executed in the body.

5) The for loop ran 12 times, meaning the statements are printed out 12 times.

Adding 0 to the list.

Adding 1 to the list.

Adding 2 to the list.

Adding 3 to the list.

Adding 4 to the list.

Adding 5 to the list.

List consists of: 0

List consists of: 1

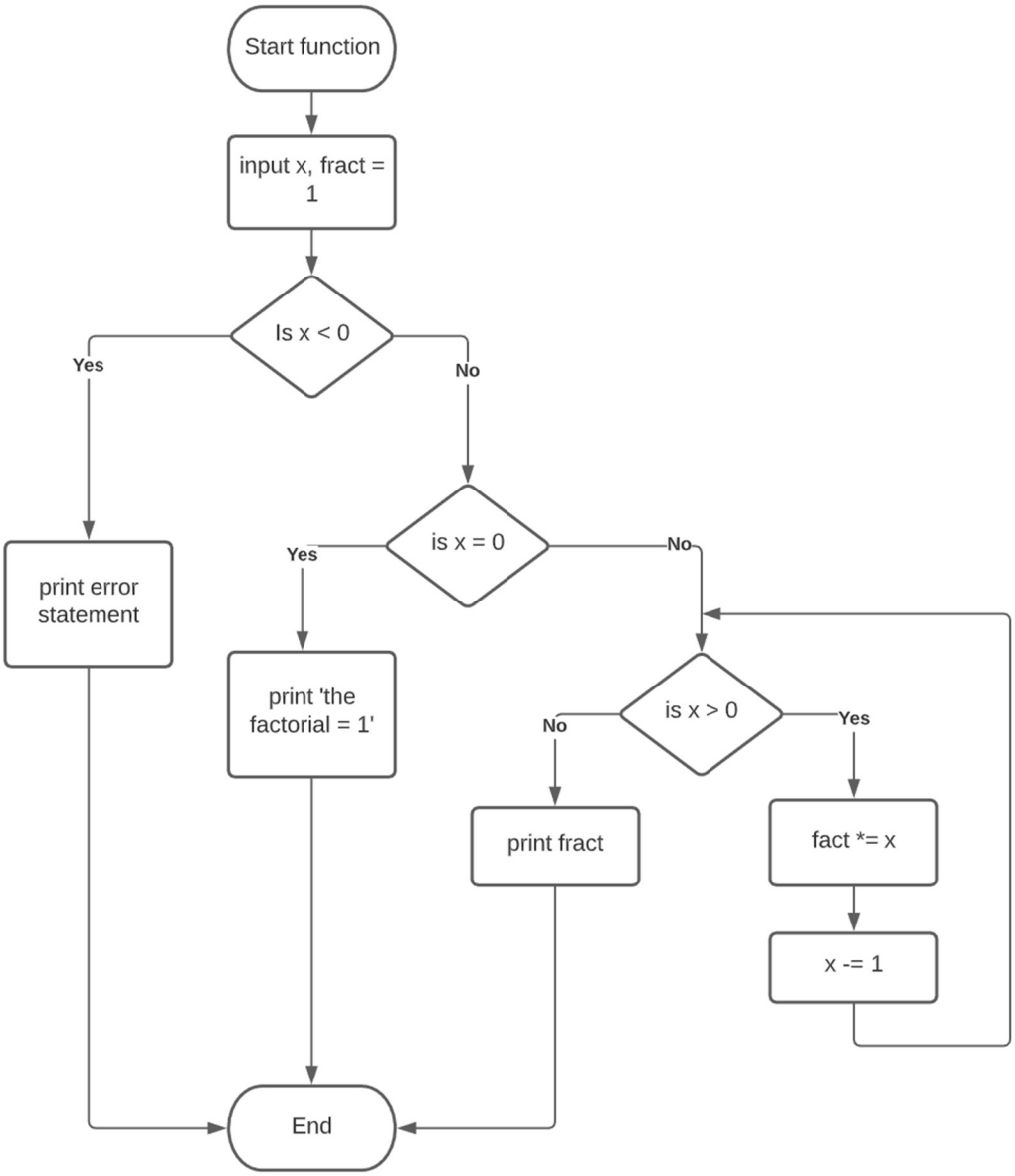
List consists of: 2

List consists of: 3

List consists of: 4

List consists of: 5

Task 2:

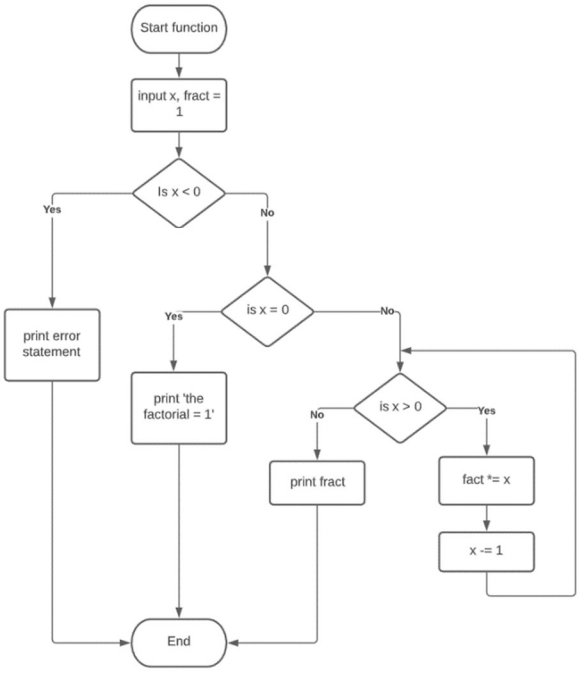


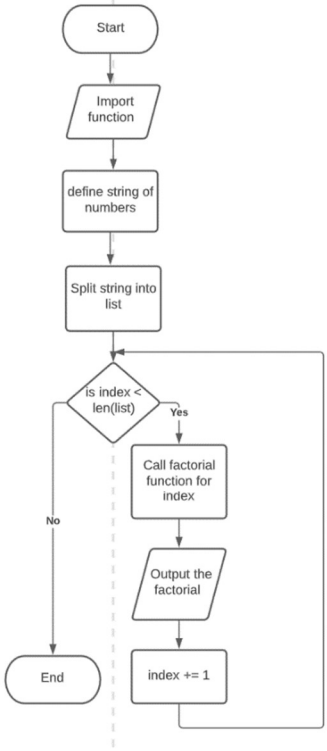
1) a for loop would have been more appropriate since we know the number of iterations

2) you can use a while loop; you just must increment/decrement the counter for the while loop.

Task 3:

Part A:

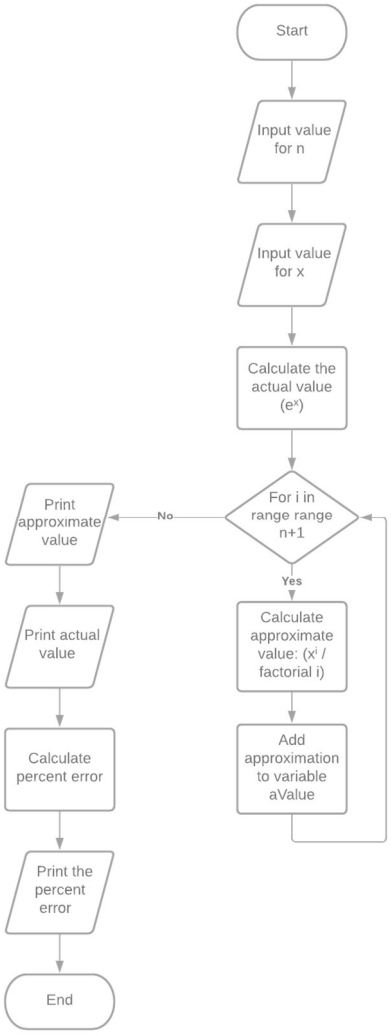




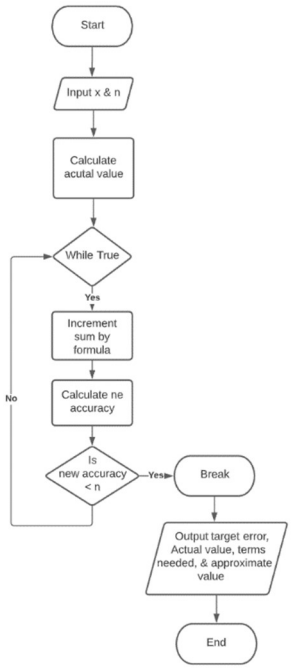
1) Loops helped simplify the code by allowing us to repeat sections of code iteratively
2) If an engineer wants a manufacturing robot to repeat the same motions when machining a part, he may use a loop

Task 4:

Part A:



Part B:



1) Loops helped us simplify the code by not having to modify tvalue through multiple lines of code

2) It is possible, but it would require a lot of repetitive code and a lot of if statements to check if you are reaching the endpoint of the pseudo-“loop” of repetitive code.