CSE108 – Computer Programming Lab
Lab 14
Linked List
23/06/2025

Implement a C program that takes two types of commands from the user:

- Command type 1: "generate n" - generates n random geometric entities and pushes them into to a LINKED LIST. Successive generate commands add at the end of this list. The geometric entities are:

    o Circle defined by its radius.

    o Rectangle defined by its width and height.

    o A right-angle triangle defined by the length of the perpendicular edges.

- Command type 2: "process circle/triangle/rectangle" finds (if any) the LAST circle/triangle/rectangle in the list, prints and removes it from the list. The printing format is:

    o Circle: `circle 2.2`

    o Triangle: `triangle 2.1 1.0`

    o Rectangle: `rectangle 1.2 3.1`

    If nothing is found, the following printed and no other action is taken:

    `No circle/triangle/rectangle found!`

- Given that at least one generate command is given, successive process commands can exhaust the list. In that case, the program exits with the following message:

    `All the entities are processed.`

A simple run of your program would look like this:

```
generate 2
process circle
circle 2.2
process circle
No circle found!
process triangle
No triangle found!
process rectangle
rectangle 1.1 2.2
All the entities are processed.
```

Requirements:

1. Make sure that an union type is used in the linked list. This means that you may need to have an additional flag to keep track of the geometry type.
2. The geometry type is chosen at random. Similarly, the dimensions of the geometry should be random as well. You can assume that the dimensions are between 0.1 and 100.0.
3. The user can ask at most 100 and at least 1 items to be created at any given time. The command requests can be as many as needed.
4. You are expected to implement your list of items using LINKED LISTs. Failure to use linked lists will result in 0 credit for the entire lab.