

Objective 4: Challenges

You should attempt one difficulty ✨ challenge, one difficulty ✨ ✨ challenge, and one difficulty ✨ ✨ ✨ challenge.

Under age challenge

Difficulty: ✨

Write a program that asks for your age. If you are over 18 it outputs the message, "Over 18", otherwise it outputs, "Under age".

Water temperature challenge

Difficulty: ✨

Write a program that reads in the temperature of water in a container in Centigrade and displays a message stating whether the water is frozen (zero or below), boiling (100 or greater) or neither.

Vocational grade challenge

Difficulty: ✨

Write a program that allows you to enter a test mark out of 100.

The program outputs "FAIL" for a score less than 40, "PASS" for a score of 40 or more, "MERIT" for a score of 60 or more and "DISTINCTION" for a score of 80 or more.

Extended visual dice challenge

Difficulty: ✨

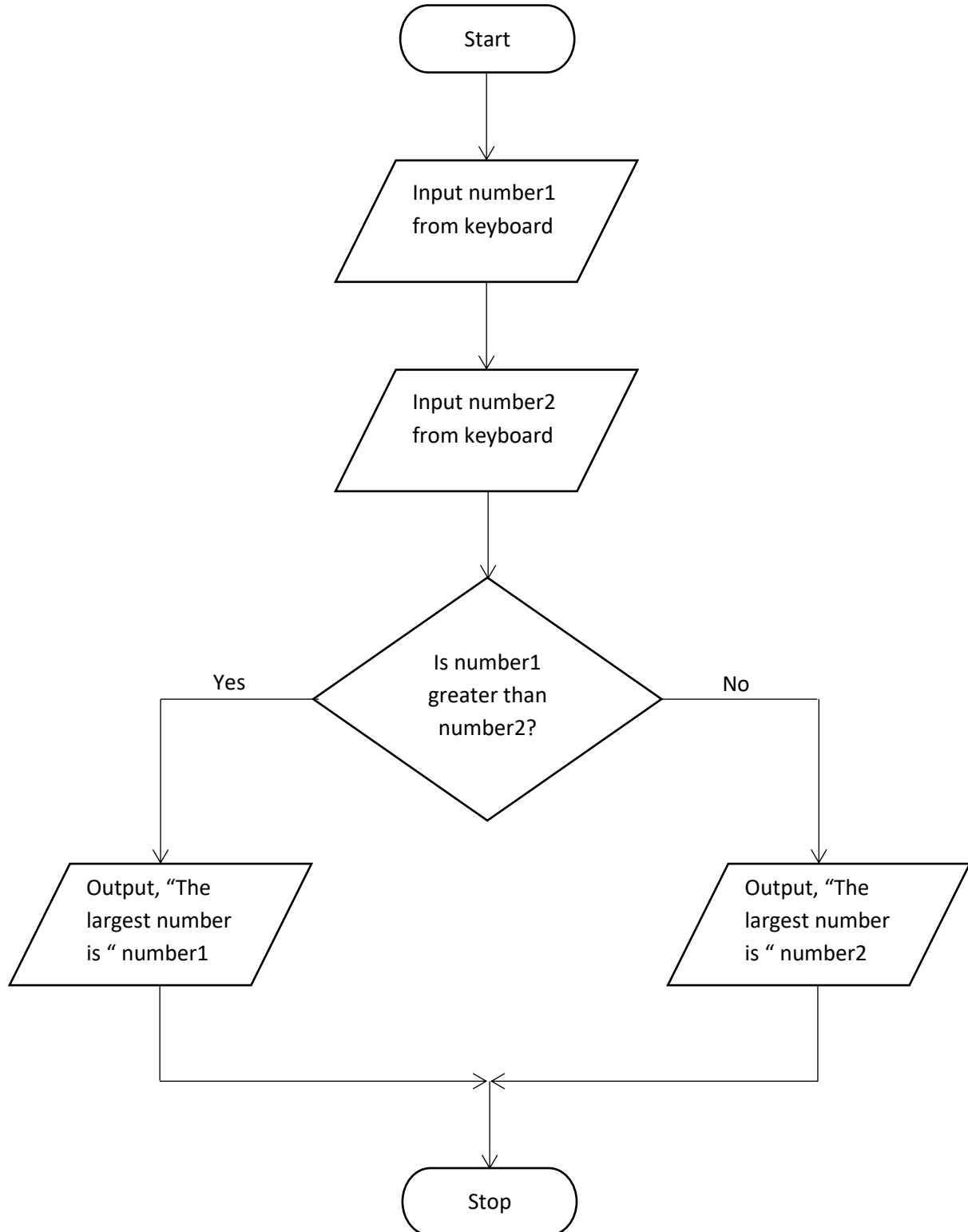
For a six sided dice, write a program that asks for a number and outputs that number as a graphical dice. E.g.

```
oooooooooooo
o           o
o  #       o
o   #     o
o       # o
o           o
oooooooooooo
```

Greatest number challenge

Difficulty: ✂

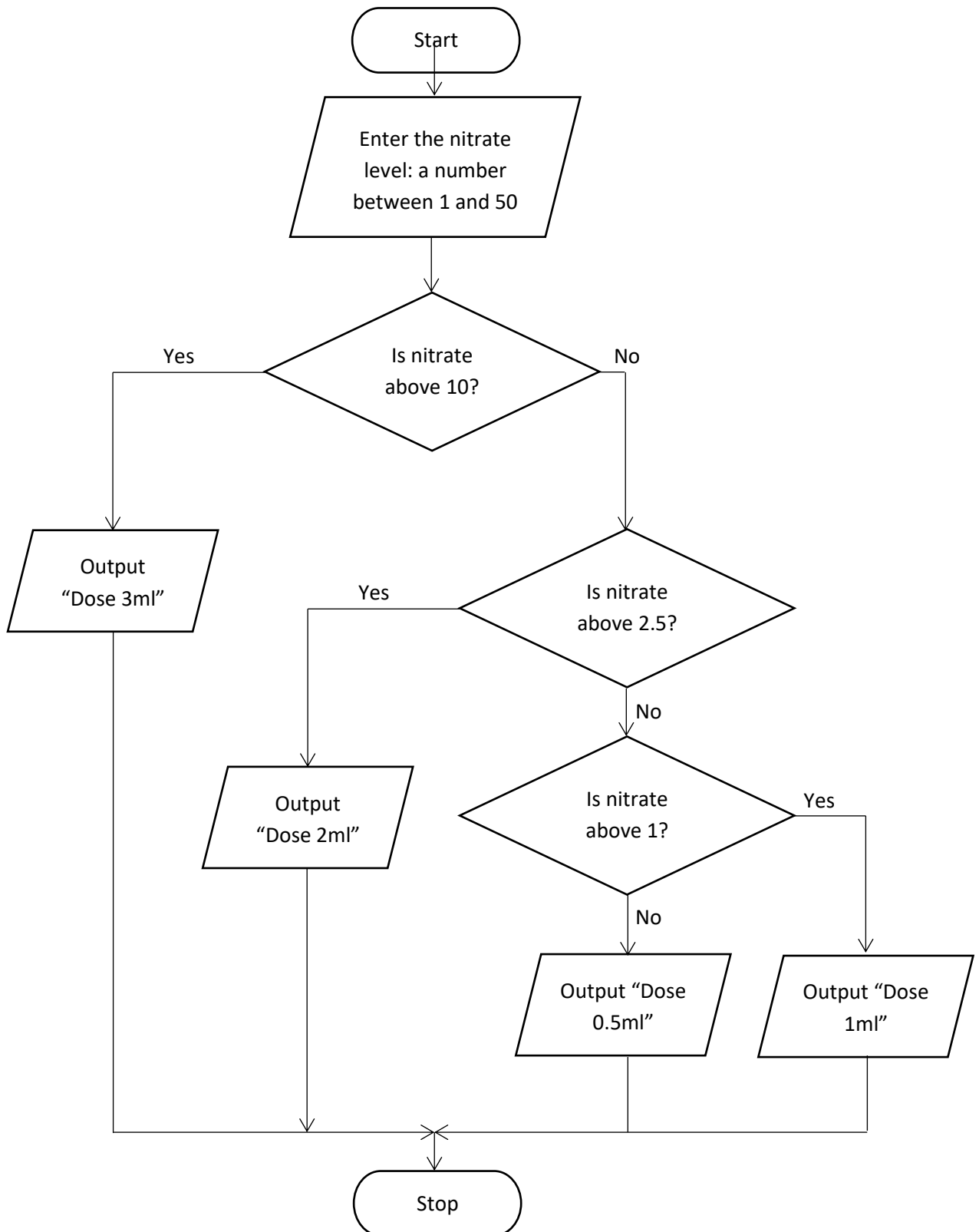
Write a program to display the larger of two numbers entered:



Nitrate challenge

Difficulty: ✖✖

When keeping fish, one of the goals to reduce algae is to keep nitrates to a minimum. One way of doing this is to dose a carbon source which nitrifying bacteria within an aquarium consume together with nitrates. The carbon source has to be dosed very precisely. Write this program to determine the dose:



Portfolio grade challenge

Difficulty: ✖✖

Write a program that inputs a mark from the keyboard for sections of a project: 'analysis', 'design', 'implementation' and 'evaluation'. The program should output the total mark, the grade, and how many more marks were needed to get into the next mark band.

Grades are:

<2	U
2	1
4	2
13	3
22	4
31	5
41	6
54	7
67	8
80	9

Periodic table challenge

Difficulty: ✖✖✖

Write a program that asks the user to enter the symbol or name of an element, or group it belongs to. The program should output the name of the element and its atomic weight. E.g.

The user enters Li. The program outputs:

Element: Lithium (Li)

Atomic weight: 6.94

Group: Alkali metals

If the user enters Alkali metals, the program outputs the data for all the elements in the alkali metals group.

You only need to get this working for 6 elements from two different groups.