Question 1

Create a function to calculate sum of “TripleNumber”. TripleNumber is defined as a sequence starting with 2, 2, 3, 7, 12, 22, 41 … where the nth number is the sum of the previous three in the sequence. If the function input is N, the function should return the N-th TripleNumber (N starts with 1, not 0).

For example:

- If input is 1: output should be 2
- If input is 2: output should be 2
- If input is 4: output should be 7 (2+2+3)
- If input is 7: output should be 41 (7+12+22)

Please write two versions of this function, one iterative and one recursive.

Question 2

Create a function to find the largest continuous area of 1's in a matrix

Two squares are considered continuous if it's vertically or horizontally adjacent. Diagonally adjacent squares are not continuous.

Example matrix 1

The largest continuous area here is the green area which 5 squares, output is 5

0	1	1	1
0	0	1	0
0	0	1	0
1	0	0	0
1	1	0	0

Example matrix 2: output should be 11

0	0	1	1	1	1
1	0	0	0	0	1
1	0	0	0	0	1
1	0	0	0	0	0
1	0	1	0	0	0
1	1	0	1	0	0
1	1	1	1	0	1

Question 3

Our sales team receives new sales leads (companies) and we need a way to distribute the leads evenly to the team members. Each salesperson has areas of specialties that can only accept certain types of leads based on the size of the company and the company's HQ location.

Please create a function allocate_lead(leads, config) that will allocate leads to between the sales team.
param leads: is a list of leads and each lead is a dict. Example {'lead_id': 1, 'size': 600, 'HQ': "US"}
param config: this is a configuration that determines how the lead should be assigned.
The function should return a list of dict that represent the lead assignment. For example [{'lead_id": 1, "assigned_to": "User A"}]

Please use the following assignment rule for the config. Part of this exercise is figuring out the best data structure to store the rules.

	Company Size	HQ Location
User A	0 - 500	US
User B	Any size	US
User C	500+	Anywhere
User D	Any size	Anywhere

Based on this rule, if the lead company is size 1500 and in the US, that means User B, C and D are eligible to receive it.
We want each user to only receive leads they are eligible for, and secondly everyone to receive equal number of leads as much as possible without violating the eligibility.