#Homework 5 (Graphs & Sorting)

Rules:

✓ Deadline for completion of homework until: 08 June 2022 (23:59, *before midnight*)
✓ 20 points will be deducted for one day delay, you will get 0 points if you are 5 days late.
✓ Upload your homework on Portal:
   - Compress your homework folder into .rar / .zip / .7z
   - Use your student id as the name for your homework, along with the homework code. (Example: 1086412_HW5.rar / 1086412_HW5.zip / 1086412_HW5.7z).

   (important)
✓ C++ allowed library <iostream>, <cstdlib>, <string>, <vector>, <queue>, <fstream>, <string>,<cmath> do not use other kind of library.
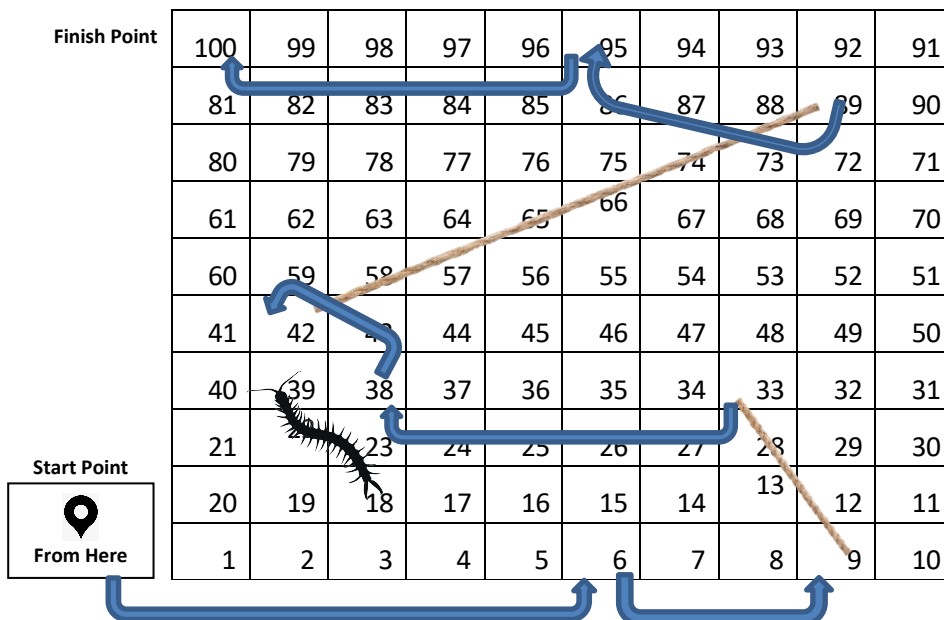✓ Use the Homework5_main.cpp that already provided to combine all of your codes.

```
ID:<107****>
Homework 5
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Choose to access
1.<Task1>
2.<Task2>
3.<Task3>
----------------
```

Homework Tasks:

➢ **Task 1 (40%)**
   Find the smallest number of throws dice are required to finish a given Rope and Centipede game.

Finish Point

100	99	98	97	96	95	94	93	92	91
81	82	83	84	85	86	87	88	89	90
80	79	78	77	76	75	74	73	72	71
61	62	63	64	65	66	67	68	69	70
60	59	58	57	56	55	54	53	52	51
41	42	43	44	45	46	47	48	49	50
40	39	38	37	36	35	34	33	32	31
21	22	23	24	25	26	27	28	29	30
20	19	18	17	16	15	14	13	12	11
1	2	3	4	5	6	7	8	9	10

Start Point
From Here
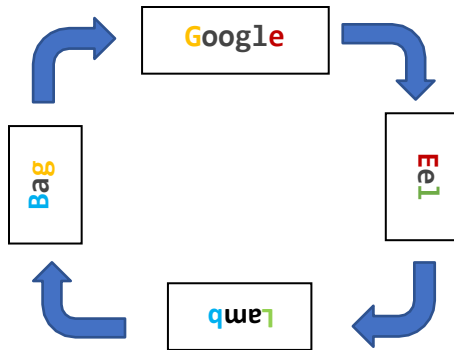
Example:

Input:
9,33
42,89
39,18

Output:
6

Why 6? Minimum Moves (Rolling Dice)

Dice 6 (start-6), Dice 3 (6-9), Rope (9-33), Dice 5 (33-38), Dice 4 (38-42), Rope (42-89), Dice 6 (89-95), Dice 5 (95-100).

➢ **Task 2 (40%)**

Create a program that where the words can be linked using the first letter and the last letter (more than 1 word, less than 50 words).


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Example:

Input:
Google
Lamb
Eel
Bag

Output:
Google-Eel
Eel-Lamb
Lamb-Bag
Bag-Google
```
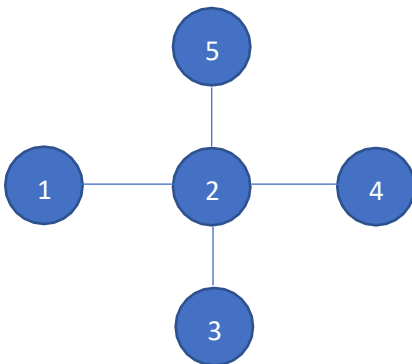
- The beginning of the output must be start with the first word of the input.
- he connection must be complete like a chain, the end and beginning words must connected, if the connection didn't complete please set the output "circle not complete"
- If there is no connection at all please set the output "**No Connection"**
- If the list input have same words please set the input "**same words detected**"
- If there is possibility to create different kind of words please show all the possibility as output, but the limit is 5 different kind of possibility if it more than 5.

➢ **Task 3 (20%)**

Search the middle node of star graph


```
Example:

Input:
1,2
2,5
4,2
2,3

Output:
2
```

- If there is no center (the same point all the graph can connect) please set output "**no middle**"

TA Information:

Name: **Gideon (吉迪恩)**

Email: **dywithly@gmail.com**

Lab Room: **Building 5 – Room 5402**