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2/11/2025

Programming Methodology 1

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Lab 3

Exercise 1

- a) Array size = 1 (single element array, same max/min)

```
● samirvarma@Samirs-MacBook-Pro-2 Lab5 % ./exercise1
Original Array: 1
Reversed Array: 1
Target = 1, Frequency = 1
Max: 1, Min: 1%
○ samirvarma@Samirs-MacBook-Pro-2 Lab5 %
```

- b) Array at max size with repeated elements

```
● samirvarma@Samirs-MacBook-Pro-2 Lab5 % ./exercise1
Original Array: 1 2 2 4 5
Reversed Array: 5 4 2 2 1
Target = 2, Frequency = 2
Max: 5, Min: 1%
```

- c) Array with unique elements, random and unsorted

```
● samirvarma@Samirs-MacBook-Pro-2 Lab5 % ./exercise1
Original Array: 5 1 3 4 2
Reversed Array: 2 4 3 1 5
Target = 2, Frequency = 1
Max: 5, Min: 1%
```

- d) 2x2 matrix

```
Original Matrix:
1 2
3 4
Rotated Matrix:
3 1
4 2
```

e) 3x3 matrix

```
Original Matrix:
1 2 3
4 5 6
7 8 9
Rotated Matrix:
7 4 1
8 5 2
9 6 3
```

f) 5x5 matrix

```
Original Matrix:
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
Rotated Matrix:
21 16 11 6 1
22 17 12 7 2
23 18 13 8 3
24 19 14 9 4
25 20 15 10 5
```

g) Invalid size (0 or negative, above max size)

```
● samirvarma@Samirs-MacBook-Pro-2 Lab5 % gcc exercise1.c -o exercise1
● samirvarma@Samirs-MacBook-Pro-2 Lab5 % ./exercise1
Invalid size!%
○ samirvarma@Samirs-MacBook-Pro-2 Lab5 % █
```

Exercise 2

a) General Output

```
● samirvarma@Samirs-MacBook-Pro-2 Lab5 % ./exercise2
String Padding Test:
Original: "Hello"
After padding to 8: "Hello  "
Length: 8

Pattern Search Test:
String: "banana"
Pattern: "ana"
Found 2 occurrences at positions: 1, 3
○ samirvarma@Samirs-MacBook-Pro-2 Lab5 %
```

b) Invalid padding input (target length smaller than string), pattern at start of string

```
Cannot perform padding, invalid size.
Pattern Search Test:
String: "banana"
Pattern: "b"
Found 1 occurrences at positions: 0
```

c) Padding empty string at max length

```
After padding to 100: "
"
Length: 99
```

d) Edge case/invalid input handling

```
● samirvarma@Samirs-MacBook-Pro-2 Lab5 % gcc exercise2.c -o exercise2
● samirvarma@Samirs-MacBook-Pro-2 Lab5 % ./exercise2
Cannot perform padding, invalid size.
Cannot perform pattern search, invalid pattern or search string.
○ samirvarma@Samirs-MacBook-Pro-2 Lab5 %
```