

## ✓ Automatic Chess Bot Design

### Assignment 1

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#Q1

```
nums = list(map(int, input("Enter a list: ").split()))
```

Enter a list: 1 2 39 7

#Q1.1

```
reversed_list = nums[::-1]  
print("reversed list:", reversed_list)
```

reversed list: [7, 39, 2, 1]

#Q1.2

```
total = sum(nums)  
average = total / len(nums)  
print("Sum:", total)  
print("Average:", average)
```

Sum: 49  
Average: 12.25

#Q1.3

```
filtered = [x for x in nums if x % 2 != 0]  
print("list without even numbers:", filtered)
```

list without even numbers: [1, 39, 7]

#Q2

```
text=input("write something:")  
def count_vowels_and_consonants(text):  
    vowels = "aeiouAEIOU"  
    v_count = c_count = 0  
    for char in text:  
        if char.isalpha():  
            if char in vowels:  
                v_count += 1  
            else:  
                c_count += 1  
    return v_count, c_count  
  
v, c = count_vowels_and_consonants(text)  
print(f"Vowels: {v}")  
print(f"Consonants: {c}")
```

```
⇒ write something:ejhalh  
Vowels: 2  
Consonants: 4
```

#Q3

```
n = int(input("Enter a number: "))
```

```
if n > 0:  
    print("Number is positive.")  
elif n < 0:  
    print("Number is negative.")  
else:  
    print("Number is zero.")
```

```
if n % 2 == 0:  
    print("Number is even.")  
else:  
    print("Number is odd.")
```

```
⇒ Enter a number: -69  
Number is negative.  
Number is odd.
```

#Q4

```
with open("notes.txt", "w") as f:  
    f.write("Python is fun.\n")  
    f.write("Let's learn it well!")
```

```
with open("notes.txt", "r") as f:  
    content = f.read()  
    print("File contents:\n", content)
```

```
⇒ File contents:  
Python is fun.  
Let's learn it well!
```

#Q5

```
student_marks = {}  
for _ in range(5):  
    name = input("Enter student name: ")  
    marks = int(input(f"Enter marks for {name}: "))  
    student_marks[name] = marks
```

```
print("Student Marks:", student_marks)
```

```
max_marks = max(student_marks.values())  
toppers = [name for name, marks in student_marks.items() if marks == max_marks]  
print("Top Scorer(s):", ", ".join(toppers))
```

```
⇒ Enter student name: hi  
Enter marks for hi: 65  
Enter student name: by  
Enter marks for by: 54  
Enter student name: ab  
Enter marks for ab: 34
```

```
Enter student name: hho
Enter marks for hho: 4
Enter student name: kk
Enter marks for kk: 66
Student Marks: {'hi': 65, 'by': 54, 'ab': 34, 'hho': 4, 'kk': 66}
Top Scorer(s): kk
```

## ✓ Chess Basics

### Q1

64

2 sides

pieces per side: 1 King, 1 Queen, 2 Rooks, 2 Bishops, 2 Knights, 8 Pawns

white queen starts on d1

### Q2

Bishop moves diagonally any number of squares.

Knight

Diagonally forward by 1 square

### Q3

Castling: King and rook move simultaneously. Conditions:

No pieces in between

King and rook haven't moved

King is not in check and doesn't pass through check

En Passant: Special pawn capture when opponent moves a pawn two squares forward from its starting position, and your adjacent pawn can capture it as if it moved only one square.

Pawn reaches other side: It is promoted to any other piece other than king.

### Q4

Checkmate the opponent's king.

Check: King is under threat but can escape.

Checkmate: King is under threat and cannot escape.

Stalemate: Player to move has no legal move and is not in check - results in a draw.

