

Aim:

You are required to implement a simple application for managing elements in a civil structure. The application should allow users to add elements, remove elements, display all current elements, and exit the application. Use a set to store the elements, as it automatically handles duplicate entries.

Implement the following functions:

- **display_elements(elements)**: This function takes a set of elements and prints each element in a sorted order.
- **add_element(elements, element)**: This function takes the set of elements and an element to add, adding the element to the set.
- **remove_element(elements, element)**: This function takes the set of elements and an element to remove. If the element exists, it removes it; otherwise, it prints a **"not found"** message.

Initialize an empty set to store civil structure elements.

Use a loop to continuously display a menu that allows the user to:

- Add a new element to the civil structure
- Remove an existing element from the civil structure
- Display all current elements in the civil structure
- Quit the application

Input Format:

- The application should prompt the user for their choice of action (1 to 4).
- If the user chooses to add or remove an element, the application should prompt for the element name.

Output Format:

The program should print appropriate messages based on user actions, such as:

- Confirming when an element has been added or removed.
- Indicating if an element to remove was not found.
- Displaying all elements currently in the civil structure in sorted order.
- Exiting the application.

Note : Refer to sample test cases for better understanding of input and output format

Source Code:

[civilStructureSets.py](#)

```
# Typ
list=[]
while(True):
    print("Civil Structure Application")
    print("1.Add Element")
    print("2.Remove Element")
    print("3.Display Elements")
    print("4.Quit")
    c=int(input("Enter your choice:"))
    if(c==1):
        y=input("element to add:")
        list.append(y)
```

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    print("added to the civil structure")
elif(c==2):
    y=input("element to remove:")
    list.remove(y)
    print("removed from the civil structure")
elif(c==3):
    print("Elements in the Civil Structure:")
    list=set(list)
    list=sorted(list)
    for v in list:
        print(v)
elif(c==4):
    print("Exiting the civil structure application")
    breakpoint
else:
    print("Invalid choice")

```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Civil Structure Application 1
1.Add Element 1
2.Remove Element 1
3.Display Elements 1
4.Quit 1
Enter your choice: 1
element to add: floor
added to the civil structure 1
Civil Structure Application 1
1.Add Element 1
2.Remove Element 1
3.Display Elements 1
4.Quit 1
Enter your choice: 1
element to add: roof
added to the civil structure 1
Civil Structure Application 1
1.Add Element 1
2.Remove Element 1
3.Display Elements 1
4.Quit 1
Enter your choice: 1
element to add: blueprint
added to the civil structure 1
Civil Structure Application 1
1.Add Element 1
2.Remove Element 1
3.Display Elements 1
4.Quit 1
Enter your choice: 1
element to add: blueprint
added to the civil structure 3

Civil Structure Application 3
1.Add Element 3
2.Remove Element 3
3.Display Elements 3
4.Quit 3
Enter your choice: 3
Elements in the Civil Structure: 5
blueprint 5
floor 5
roof 5
Civil Structure Application 5
1.Add Element 5
2.Remove Element 5
3.Display Elements 5
4.Quit 5
Enter your choice: 5
Invalid choice 2
Civil Structure Application 2
1.Add Element 2
2.Remove Element 2
3.Display Elements 2
4.Quit 2
Enter your choice: 2
element to remove: roof
removed from the civil structure 1
Civil Structure Application 1
1.Add Element 1
2.Remove Element 1
3.Display Elements 1
4.Quit 1
Enter your choice: 1
element to add: beam
added to the civil structure 3
Civil Structure Application 3
1.Add Element 3
2.Remove Element 3
3.Display Elements 3
4.Quit 3
Enter your choice: 3
Elements in the Civil Structure: 4
beam 4
blueprint 4
floor 4
Civil Structure Application 4
1.Add Element 4
2.Remove Element 4
3.Display Elements 4
4.Quit 4
Enter your choice: 4
Exiting the civil structure application

Test Case - 2
User Output
Civil Structure Application 5

1.Add Element 5
2.Remove Element 5
3.Display Elements 5
4.Quit 5
Enter your choice: 5
Invalid choice 4
Civil Structure Application 4
1.Add Element 4
2.Remove Element 4
3.Display Elements 4
4.Quit 4
Enter your choice: 4
Exiting the civil structure application