In [1]:
```
#practical no 3
a = [4, 61, 4, 116, 6]

for i in range(len(a)):
    mid_idx = i + a[i:].index(min(a[i:]))
    a[i], a[mid_idx] = a[mid_idx], a[i]

print('result:', a)
```

```
result: [4, 4, 6, 61, 116]
```

In [ ]:
```
```

In [2]:
```
# bfs
def bfs(graph, start):
    visited, queue = set(), [start]

    while queue:
        node = queue.pop(0)
        if node not in visited:
            print(node)  # or store in a list to return later
            visited.add(node)
            queue.extend(graph[node] - visited)

# Example usage:
graph = {
    'a': {'b', 'c'},
    'b': {'a', 'd', 'e'},
    'c': {'a', 'f'},
    'd': {'b'},
    'e': {'b'},
    'f': {'c'}
}

bfs(graph, 'a')
```

```
a
b
c
d
e
f
```

In [3]:
```
#dfs
def dfs(graph, node, visited):
    if node not in visited:
        print(node, end=' ')
        visited.add(node)
        for neighbor in graph[node]:
            dfs(graph, neighbor, visited)

# Example usage:
graph = {
    'a': ['b', 'c'],
    'b': ['a', 'd', 'e'],
    'c': ['a', 'f'],
    'd': ['b'],
    'e': ['b'],
    'f': ['c']
}

visited_nodes = set()
dfs(graph, 'a', visited_nodes)
```

```
a b d e c f
```

In [*]:
```
# prac 5 : Develop an elementary chatbot for any suitable customer
interaction application
def simple_chatbot(user_input):
    responses = {
        'hello': "Hi there! How can I help you?",
        'bye': "Goodbye! Have a great day.",
        'name': "I'm your simple chatbot.",
    }

    return responses.get(user_input.lower(), "I don't understand that. Can you

if __name__ == "__main__":
    print("Welcome to the Simple Chatbot!")

    while True:
        user_input = input("You: ")
        if user_input.lower() == 'exit':
            print("Chatbot: Goodbye! Have a great day.")
            break

        response = simple_chatbot(user_input)
        print(f"Chatbot: {response}")
```

```
Welcome to the Simple Chatbot!
You: hello
Chatbot: Hi there! How can I help you?
You: name
Chatbot: I'm your simple chatbot.
You: s
Chatbot: I don't understand that. Can you ask something else?
You: bye
Chatbot: Goodbye! Have a great day.

You:
```

In [*]:
```
# 6 help desk maangement
class HelpDeskExpertSystem:
    def __init__(self):
        self.kb = {'issue1': 'Solution for issue1', 'issue2': 'Solution for iss

    def get_solution(self, issue):
        return self.kb.get(issue, 'Sorry, I cannot provide a solution for that

h = HelpDeskExpertSystem()
while True:
    i = input("Describe your issue (or type 'exit' to quit): ").lower()
    if i == 'exit':
        print("Goodbye!")
        break
    print(f"Expert System: {h.get_solution(i)}")
```

In [ ]: