PORT SCANNER USING PYTHON

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1. Introduction
A Port Scanner is a cyber security tool used to identify open and closed ports on a target system. This project is developed using Python programming language for educational purposes only.

2. Objectives of the Project
• To understand networking and port concepts
• To learn Python socket programming
• To identify open and closed ports on a system

3. Applications of the Project
• Network security testing
• Ethical hacking learning
• Identifying active services on a system

4. Tools and Technologies Used
• Programming Language: Python 3.x
• Library: Socket
• Operating System: Windows

5. System Requirements
Hardware: Laptop/Desktop, Minimum 4GB RAM
Software: Windows OS, Python Installed

6. Project Working
The program takes an IP address as input from the user and scans commonly used ports. If the connection to a port is successful, it is shown as OPEN; otherwise, it is shown as CLOSED. After scanning all ports, a completion message is displayed.

7. Algorithm
1. Start the program
2. Accept IP address from user
3. Define list of ports
4. Create socket connection
5. Scan ports one by one
6. Display result
7. Stop the program

8. Source Code

```
import socket


target = input("Enter IP address: ")
ports = [21, 22, 23, 25, 53, 80, 110, 443]

print("Starting Port Scanning...")

for port in ports:
    s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
    socket.setdefaulttimeout(1)

    result = s.connect_ex((target, port))

    if result == 0:
        print(f"Port {port} is OPEN")
    else:
        print(f"Port {port} is CLOSED")

    s.close()

print("Scanning completed")
```

9. Output Explanation

The output shows the status of each scanned port. Open ports indicate active services, while closed ports indicate no running service.

10. Advantages

- Easy to understand
- Beginner-friendly cyber security project

11. Limitations

- Limited number of ports scanned
- No graphical interface

12. Ethical Consideration

Port scanning without permission is illegal. This project is strictly for educational purposes only.

13. Future Scope

- GUI can be added
- More ports can be scanned
- Automation features can be included

14. Conclusion

This project helps in understanding basic networking and cyber security concepts in a practical manner.