PRT574
SECURITY ASSESSMENT IN SOFTWARE DEVELOPMENT

Assignment 2

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Introduction:

We develop a user-friendly tool for scanning network ports to detect open, closed, and filtered ports. We use Nmap to scan ports, Tkinter to design UI and Reportlab to export report in PDF format. We followed YouTube tutorial to implement the port scanning functionality. This port scanner allows user to specify the IP address and port range to scan and to export scan results in PDF format. As demonstration, we scan all 65535 ports of IP address 192.168.0.184, and provide the scan result.

YouTube tutorial for Nmap port scanner:
https://www.youtube.com/watch?v=x4AE5yOF9pE&ab_channel=DavidBombal

Files:

1. port_scanner_nmap.py
2. port_scan_report_2024-04-26 000620
3. Group 46_ assignment2 report.doc

Features:

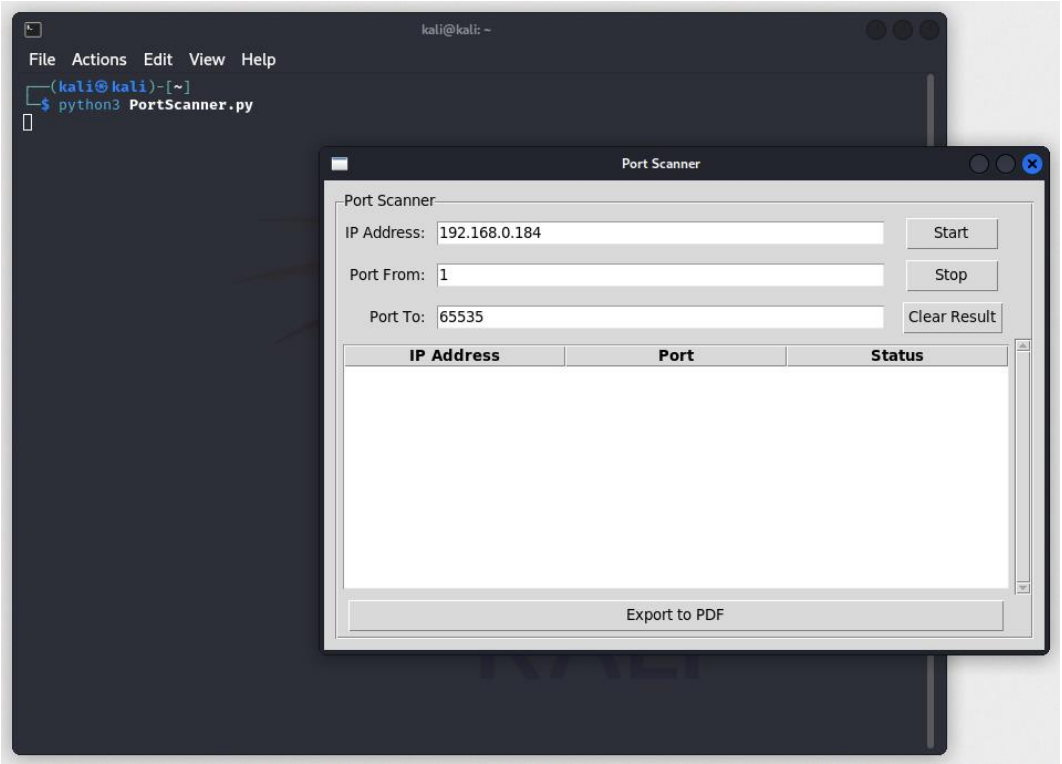
1. Easy for users to input parameters and interact with the application.
2. The port scanner can identify open, closed, and filtered ports.
3. Users can specify the IP address and port range to scan.
4. Users can export scan results in PDF format.

Instruction:

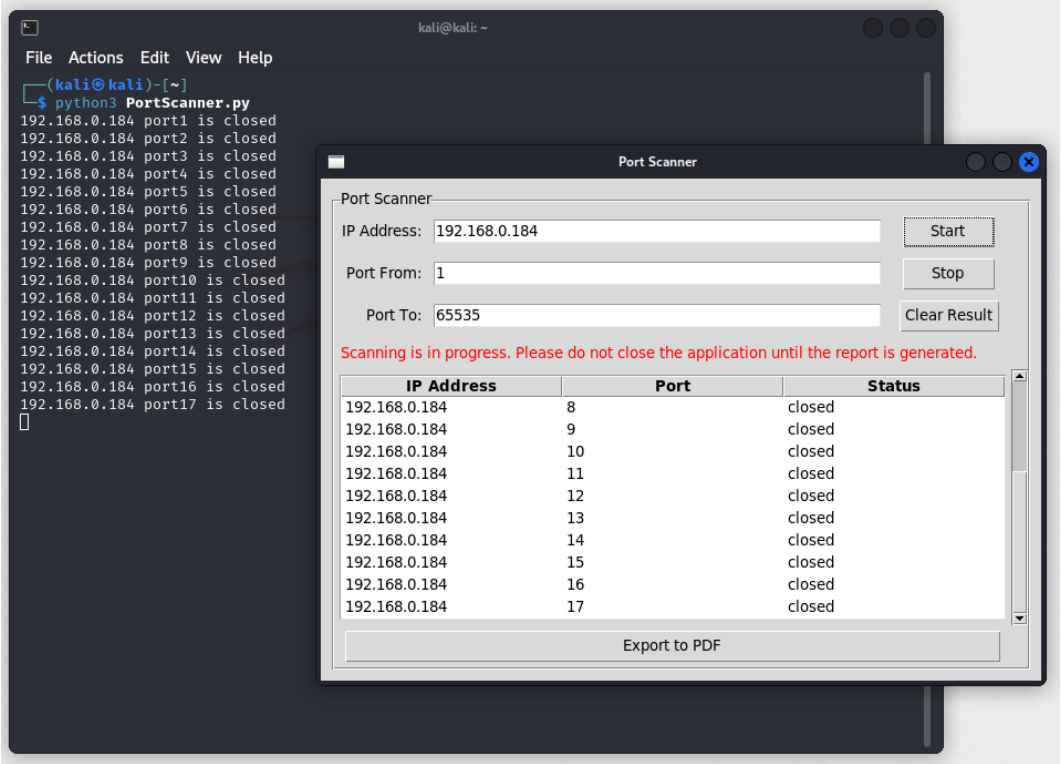
1. Installation:
   - Install libraries python-nmap and reportlab
     >> pip install python-nmap
     >> pip install reportlab
2. Execution:
   - Run port_scanner_nmap.py
     >> python port_scanner_nmap.py
   - Input the IP address and port range, then click the “Start” to initiate the scan.
   - After the scan is completed, export the scan results to a PDF report by clicking “Export to PDF”.
   - Stop the scanning process at any stage by clicking “Stop”.

Demonstration:

1. Initial screen:

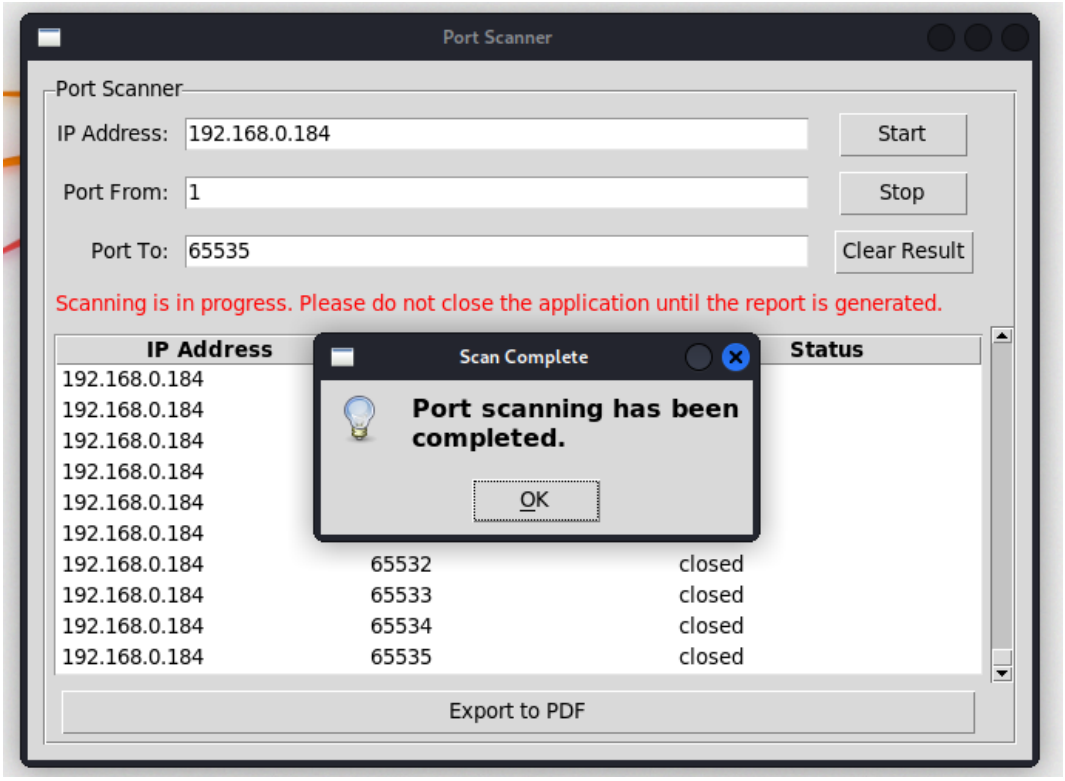


2. Input Parameters and Start Scan

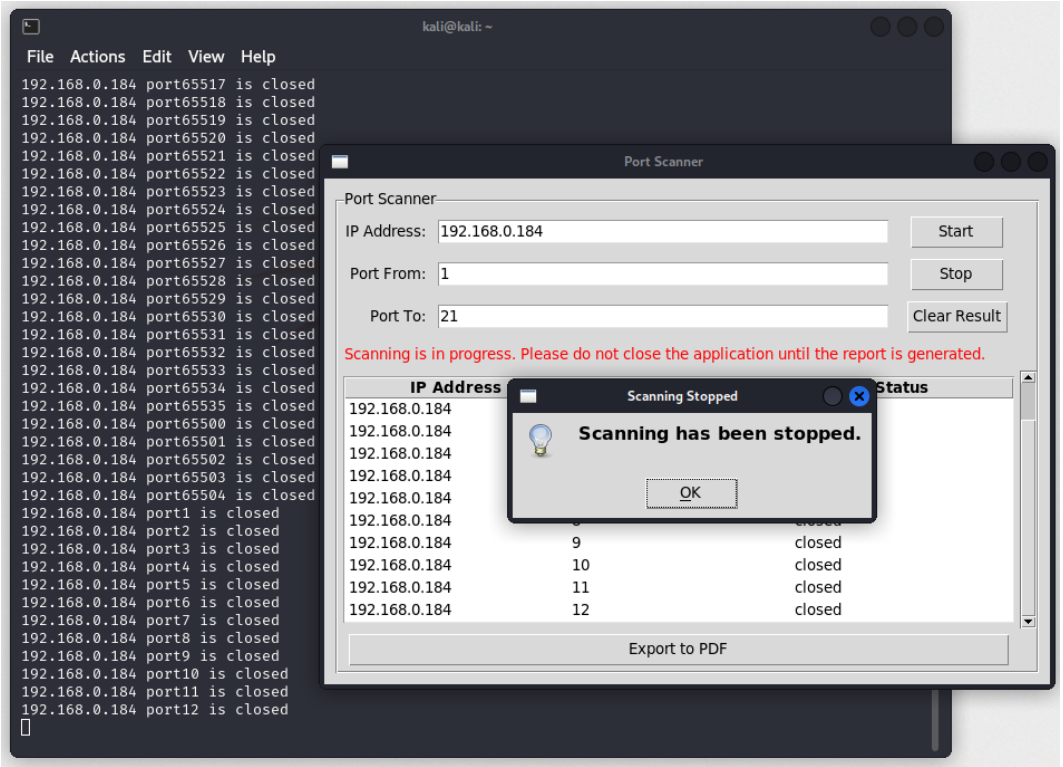


*Message indicating scanning is in progress.

3. If the scan is completed, it will show completion message.

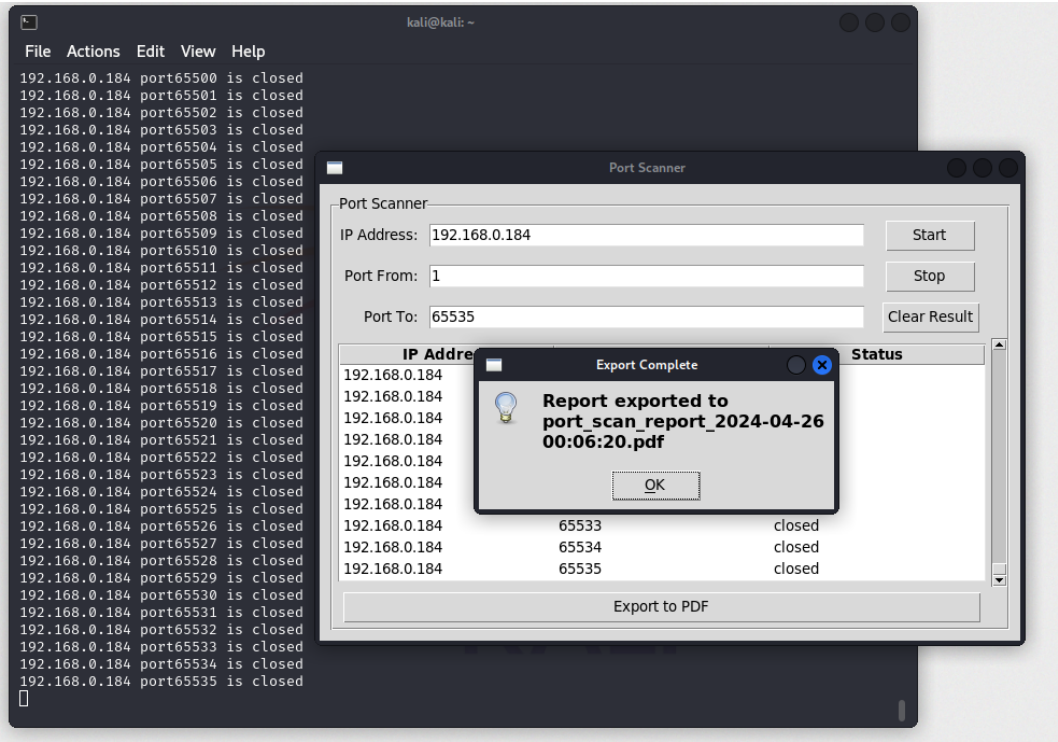


4. User can stop the scanning at any time.



5. User can export the scan port result in PDF format.

The filename is automatically defined based on the export datetime.



6. Scan Port Report includes:
   - Report Summary: Provides the numbers of open, closed, and filtered ports.
   - Open Ports List: Displays all the open ports.
   - Scan Port Result: Shows the port results of all scanned ports.

Scan Port Report

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Report Summary

IP Address: 192.168.0.184
Port Range: From 1 to 65535
There are 29 ports open.
There are 65506 ports closed.
There are 0 ports filtered.

Open Ports List

IP Address	Ports	Status	Timestamp
192.168.0.184	21	open	2024-04-25 13:13:30
192.168.0.184	22	open	2024-04-25 13:13:31
192.168.0.184	23	open	2024-04-25 13:16:17
192.168.0.184	25	open	2024-04-25 13:16:28
192.168.0.184	53	open	2024-04-25 13:16:47
192.168.0.184	80	open	2024-04-25 13:17:07
192.168.0.184	111	open	2024-04-25 13:17:29
192.168.0.184	139	open	2024-04-25 13:17:53

In Scan Port Result, open port will be marked in yellow.

Scan Port Results

IP Address	Ports	Status	Timestamp
192.168.0.184	1	closed	2024-04-25 13:13:21
192.168.0.184	2	closed	2024-04-25 13:13:21
192.168.0.184	3	closed	2024-04-25 13:13:22
192.168.0.184	4	closed	2024-04-25 13:13:22
192.168.0.184	5	closed	2024-04-25 13:13:23
192.168.0.184	6	closed	2024-04-25 13:13:23
192.168.0.184	7	closed	2024-04-25 13:13:24
192.168.0.184	8	closed	2024-04-25 13:13:24
192.168.0.184	9	closed	2024-04-25 13:13:24
192.168.0.184	10	closed	2024-04-25 13:13:25
192.168.0.184	11	closed	2024-04-25 13:13:25
192.168.0.184	12	closed	2024-04-25 13:13:26
192.168.0.184	13	closed	2024-04-25 13:13:26
192.168.0.184	14	closed	2024-04-25 13:13:27
192.168.0.184	15	closed	2024-04-25 13:13:27
192.168.0.184	16	closed	2024-04-25 13:13:28
192.168.0.184	17	closed	2024-04-25 13:13:28
192.168.0.184	18	closed	2024-04-25 13:13:29
192.168.0.184	19	closed	2024-04-25 13:13:29
192.168.0.184	20	closed	2024-04-25 13:13:30
192.168.0.184	21	open	2024-04-25 13:13:30
192.168.0.184	22	open	2024-04-25 13:13:31
192.168.0.184	23	open	2024-04-25 13:16:17