



<b>Course Title:</b>	Programming Fundamentals Lab (CL1002)
<b>Assignment Title:</b>	Lab Class Task (Manual 05)
<b>Submitted to:</b>	Sir Sandesh Kumar
<b>Name:</b>	Muhammad Usman Khan
<b>Roll No:</b>	25K-2038 BCY-1A
<b>Date:</b>	2 October 2025

### LAB EXERCISES [6 Marks]

**Scenario:** A university network is under attack. Students are receiving suspicious login attempts on their accounts. The IT security team needs to analyze login attempts and detect possible **brute-force attacks, phishing attempts, and malware alerts**.

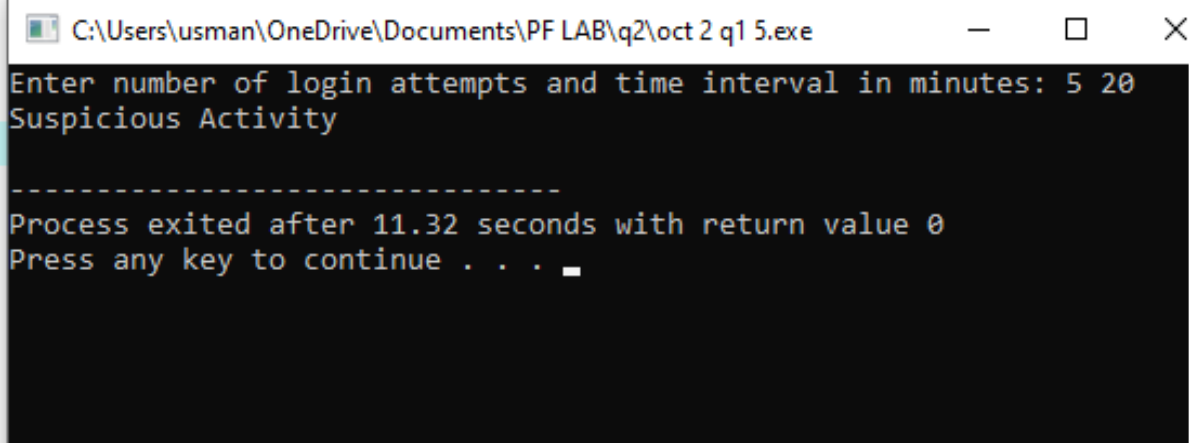
1. Write a C program for brute-force attack detection that takes input for number of login attempts and time interval (in minutes). If attempts > 5 within 10 minutes, then print **"Brute-Force Attack"** else if attempts > 3 within 30 minutes then print **"Suspicious Activity"** otherwise print **"Normal Login Behavior"**.
2. Write a C program for phishing alert categorization that takes an input for a phishing email type: 1 = Fake Login Page, 2 = Malicious Link, 3 = Urgent Money Request then, inside each case, ask for user action: 1 = Clicked, 2 = Reported, 3 = Ignored. Based on both inputs, output severity: High Risk (if clicked), Medium Risk (if ignored), Low Risk (if reported)
3. Write a C program that calculates malware infection probability by taking system vulnerability score (1-10) and malware strength score (1-10) as input and then use it in the following formula:

$$Risk = vulnerability^2 + malware^2 / 20$$

- If risk > 5, print "High Infection Probability", else "Low Infection Probability".
- Implement decision using a ternary operator.

# Question 1

```
1 #include<stdio.h>
2 int main(){
3     int mins,attempts;
4     printf("Enter number of login attempts and time interval in minutes: ");
5     scanf("%d%d", &attempts, &mins);
6     if ( attempts > 5 && mins <= 10 ){
7         printf("Brute-Force Attack\n");
8     }else if ( attempts > 3 && mins <= 30 ){
9         printf("Suspicious Activity\n");
10    }else{
11        printf("Normal Login Behaviour\n");
12    }
13    return 0;
14 }
15
```



```
C:\Users\usman\OneDrive\Documents\PF LAB\q2\oct 2 q1 5.exe
Enter number of login attempts and time interval in minutes: 5 20
Suspicious Activity

-----
Process exited after 11.32 seconds with return value 0
Press any key to continue . . .
```

# Question 2

```

1 #include<stdio.h>
2 int main()
3 {
4     int email_type, user_action;
5     printf("Enter phishing email type.\n Press 1 for Fake login Page.\n Press 2 for Malicious link.\n Press 3 for Urgent Money Request\n");
6     scanf("%d", &email_type);
7     switch(email_type){
8         case 1:
9             printf("Enter User Action:\n");
10            printf("1 = Clicked\n");
11            printf("2 = Reported\n");
12            printf("3 = Ignored\n");
13            printf("Enter the user action (1-3): ");
14            scanf("%d", &user_action);
15            printf("\nEmail Type: Fake Login Page\n");
16            if (user_action == 1){
17                printf("Severity Level: HIGH RISK (Clicked on Fake Login Page)\n");
18            }else if (user_action == 2){
19                printf("Severity Level: LOW RISK (Reported Fake Login Page)\n");
20            }else if (user_action == 3){
21                printf("Severity Level: MEDIUM RISK (Ignored Fake Login Page)\n");
22            }else{
23                printf("Invalid user action.\n");
24            }
25            break;
26        case 2:
27            printf("Enter User Action:\n");
28            printf("1 = Clicked\n");
29            printf("2 = Reported\n");
30            printf("3 = Ignored\n");
31            printf("Enter the user action (1-3): ");
32            scanf("%d", &user_action);
33            printf("\nEmail Type: Malicious Link\n");
34            if (user_action == 1){
35                printf("Severity Level: HIGH RISK (Clicked on Malicious Link)\n");
36            }else if (user_action == 2){
37                printf("Severity Level: LOW RISK (Reported Malicious Link)\n");
38            }else if (user_action == 3){
39                printf("Severity Level: MEDIUM RISK (Ignored Malicious Link)\n");
40            }else{
41                printf("Invalid user action.\n");
42            }
43            break;
44        case 3:
45            printf("Enter User Action:\n");
46            printf("1 = Clicked\n");
47            printf("2 = Reported\n");
48            printf("3 = Ignored\n");
49            printf("Enter the user action (1-3): ");
50            scanf("%d", &user_action);
51            printf("\nEmail Type: Urgent Money Request\n ");
52            if (user_action == 1){
53                printf("Severity Level: HIGH RISK (Clicked on Urgent Money Request)\n");
54            }else if (user_action == 2){
55                printf("Severity Level: LOW RISK (Reported Urgent Money Request)\n");
56            }else if (user_action == 3){
57                printf("Severity Level: MEDIUM RISK (Ignored Urgent Money Request)\n");
58            }else{
59                printf("Invalid user action.\n");
60            }
61            break;
62        default:
63            printf("Invalid email type\n");
64    }
65    return 0;
66 }

```

C:\Users\usman\OneDrive\Documents\PF LAB\q2\q2 lab 5.exe

```

Enter phishing email type.
Press 1 for Fake login Page.
Press 2 for Malicious link.
Press 3 for Urgent Money Request.

```

```

2
Enter User Action:
1 = Clicked
2 = Reported
3 = Ignored
Enter the user action (1-3): 2

```

```

Email Type: Malicious Link
Severity Level: LOW RISK (Reported Malicious Link)

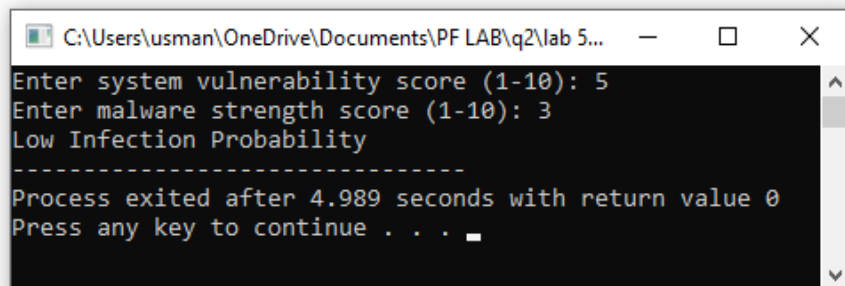
```

Compiler Resources Compile Log Debug Find Results Close

Compilation results...

# Question 3

```
1 #include<stdio.h>
2 int main() {
3     int vulnerability, malware;
4     float risk;
5     printf("Enter system vulnerability score (1-10): ");
6     scanf("%d", &vulnerability);
7     printf("Enter malware strength score (1-10): ");
8     scanf("%d", &malware);
9     risk = (vulnerability * vulnerability + malware * malware) / 20;
10    (risk > 5) ? printf("High Infection Probability") : printf("Low Infection Probability");
11    return 0;
12 }
13
```



```
C:\Users\usman\OneDrive\Documents\PF LAB\q2\lab 5...
Enter system vulnerability score (1-10): 5
Enter malware strength score (1-10): 3
Low Infection Probability
-----
Process exited after 4.989 seconds with return value 0
Press any key to continue . . .
```