Course Title:	Programming Fundamentals Lab (CL1002)
Assignment Title:	Lab Class Task (Manual 05)
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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

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

```
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

```c
#include<stdio.h>
int main(){
    int email_type, user_action;
    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
    scanf("%d", &email_type);
    switch(email_type){
        case 1:
            printf("Enter User Action:\n");
            printf("1 = Clicked\n");
            printf("2 = Reported\n");
            printf("3 = Ignored\n");
            printf("Enter the user action (1-3): ");
            scanf("%d", &user_action);
            printf("\nEmial Type: Fake Login Page\n");
            if (user_action == 1){
                printf("Severity Level: HIGH RISK (Clicked on Fake Login Page)\n");
            }else if (user_action == 2){
                printf("Severity Level: LOW RISK (Reported Fake Login Page)\n");
            }else if (user_action == 3){
                printf("Severity Level: MEDIUM RISK (Ignored Fake Login Page)\n");
            }else{
                printf("Invalid user action.\n");
            }
            break;
        case 2:
            printf("Enter User Action:\n");
            printf("1 = Clicked\n");
            printf("2 = Reported\n");
            printf("3 = Ignored\n");
            printf("Enter the user action (1-3): ");
            scanf("%d", &user_action);
            printf("\nEmail Type: Malicious Link\n");
            if (user_action == 1){
                printf("Severity Level: HIGH RISK (Clicked on Malicious Link)\n");
            }else if (user_action == 2){
                printf("Severity Level: LOW RISK (Reported Malicious Link)\n");
            }else if (user_action == 3){
                printf("Severity Level: MEDIUM RISK (Ignored Malicious Link)\n");
            }else{
                printf("Invalid user action.\n");
            }
            break;
        case 3:
            printf("Enter User Action:\n");
            printf("1 = Clicked\n");
            printf("2 = Reported\n");
            printf("3 = Ignored\n");
            printf("Enter the user action (1-3): ");
            scanf("%d", &user_action);
            printf("\nEmail Type: Urgent Money Request\n ");
            if (user_action == 1){
                printf("Severity Level: HIGH RISK (Clicked on Urgent Money Request)\n");
            }else if (user_action == 2){
                printf("Severity Level: LOW RISK (Reported Urgent Money Request)\n");
            }else if (user_action == 3){
                printf("Severity Level: MEDIUM RISK (Ignored Urgent Money Request)\n");
            }else{
                printf("Invalid user action.\n");
            }
            break;
        default:
            printf("Invalid email type\n");
    }
    return 0;
}
```

```
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

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