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Lab Project: University Management System (with Arrays)

Code:-

```
#include <iostream>
using namespace std;
int main() {
    // Constants
    const int maxSeats = 5;
    const int maxPrograms = 3;

    // Program Data
    string programNames[maxPrograms] = {"BSCS", "AI", "LAW"};
    short programMinEligibility[maxPrograms] = {550, 660, 770};
    short programAvailableSeats[maxPrograms] = {maxSeats, maxSeats, maxSeats};

    // Student Data
    string studentName = "N/A";
    string studentEmail;
    string studentPhoneNumber;
    string studentCNIC;
    string studentAppliedProgram = "N/A";
    string studentStatus = "Not Applied";
    string studentRejectionReason = "";
    short studentPreviousMarks;

    // Admin Data
    string username, password;
    int choice, adminChoice, programChoice;

    do {
        // Main Menu
        cout << "\nUniversity Admission Management System\n";
        cout << "1. Admin\n";
        cout << "2. Student\n";
        cout << "3. Exit\n";
        cout << "Enter your choice: ";
```

```

cin >> choice;

if (choice == 1) {
    // Admin Section
    cout << "Enter Admin Username: ";
    cin >> username;
    cout << "Enter Admin Password: ";
    cin >> password;

    if (username == "admin" && password == "password") {
        cout << "\nAdmin Login Successful.\n";
        cout << "1. Edit Programs\n";
        cout << "2. View Application Status\n";
        cout << "3. Logout\n";
        cout << "Enter your choice: ";
        cin >> adminChoice;

        if (adminChoice == 1) {
            // Edit Programs
            cout << "Choose Program to Edit (1: BSCS, 2: AI, 3: LAW): ";
            cin >> programChoice;
            if (programChoice >= 1 && programChoice <= maxPrograms) {
                int index = programChoice - 1;
                cout << "Enter New Program Name: ";
                cin >> programNames[index];
                cout << "Enter Minimum Eligibility Marks: ";
                cin >> programMinEligibility[index];
            } else {
                cout << "Invalid Program Choice.\n";
            }
        } else if (adminChoice == 2) {
            // View Application Status
            cout << "\nViewing Application Status:\n";
            cout << "Student Name: " << studentName << "\n";
            cout << "Applied Program: " << studentAppliedProgram << "\n";
            cout << "Status: " << studentStatus;
            if (studentStatus == "Rejected")
                cout << " (" << studentRejectionReason << ")";
            cout << "\n";
        } else if (adminChoice == 3) {
            cout << "Logging out...\n";
        } else {
            cout << "Invalid choice. Try again.\n";
        }
    } else {

```

```

        cout << "Invalid Admin credentials.\n";
    }
} else if (choice == 2) {
    // Student Section
    cout << "Enter your Name: ";
    cin >> studentName;
    cout << "Enter your Email: ";
    cin >> studentEmail;
    cout << "Enter your Phone Number: ";
    cin >> studentPhoneNumber;
    cout << "Enter your CNIC: ";
    cin >> studentCNIC;
    cout << "Enter your Previous Marks (out of 1100): ";
    cin >> studentPreviousMarks;

    // Display Available Programs
    cout << "\nAvailable Programs:\n";
    for (int i = 0; i < maxPrograms; i++) {
        cout << i + 1 << ". " << programNames[i]
            << " (Eligibility: " << programMinEligibility[i]
            << ", Seats: " << programAvailableSeats[i] << ")\n";
    }

    cout << "Enter your Program Preference (1, 2, or 3): ";
    cin >> programChoice;

    // Decision Logic
    if (programChoice >= 1 && programChoice <= maxPrograms) {
        int index = programChoice - 1;
        studentAppliedProgram = programNames[index];
        if (studentPreviousMarks >= programMinEligibility[index] &&
            programAvailableSeats[index] > 0) {
            studentStatus = "Accepted";
            programAvailableSeats[index]--;
        } else {
            studentStatus = "Rejected";
            studentRejectionReason = (studentPreviousMarks <
programMinEligibility[index])
                ? "Eligibility criteria not met"
                : "No seats available";
        }
    } else {
        studentAppliedProgram = "Invalid";
        studentStatus = "Rejected";
        studentRejectionReason = "Invalid program choice";
    }
}

```

```

    }

    cout << "\nApplication Status: " << studentStatus;
    if (studentStatus == "Rejected")
        cout << " (" << studentRejectionReason << ")";
    cout << "\n";
} else if (choice == 3) {
    cout << "Exiting the system...\n";
} else {
    cout << "Invalid choice. Try again.\n";
}
} while (choice != 3);

return 0;
}

```

Terminal:-

The screenshot shows the Visual Studio Code interface with the file `universityManagement.cpp` open. The code is a C++ program for a University Admission Management System. The terminal window at the bottom shows the command `g++ universityManagement.cpp -o .\universityManagement.exe` being executed, followed by the command `.\universityManagement.exe`. The output of the program is displayed in the terminal, showing the menu options and the prompt "Enter your choice: ".

```

PS D:\Lab project> g++ universityManagement.cpp -o .\universityManagement.exe
PS D:\Lab project> .\universityManagement.exe

University Admission Management System
1. Admin
2. Student
3. Exit
Enter your choice:

```

Figure 1 Main Screen

```
File Edit Selection View Go Run ... Lab project [Administrator]
EXPLORER
  LAB PROJECT
    ~$b Project.docx
    Lab Project.docx
    universityManagement.cpp
    universityManagement.exe
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
universityManagement
Enter your choice: 1
Enter Admin Username: admin
Enter Admin Password: password

Admin Login Successful.
1. Edit Programs
2. View Application Status
3. Logout
Enter your choice: 1
Choose Program to Edit (1: BSCS, 2: AI, 3: LAW): 2
Enter New Program Name: IT
Enter Minimum Eligibility Marks: 500

University Admission Management System
1. Admin
2. Student
3. Exit
Enter your choice: 2
Enter your Name: Hamza
Enter your Email: 78174040@student.uol.edu.pk
Enter your Phone Number: 03170934633
Enter your CNIC: 123456789123
Enter your Previous Marks (out of 1100): 600

Available Programs:
1. BSCS (Eligibility: 550, Seats: 5)
2. IT (Eligibility: 500, Seats: 5)
3. LAW (Eligibility: 770, Seats: 5)
Enter your Program Preference (1, 2, or 3): 1

Application Status: Accepted

University Admission Management System
1. Admin
2. Student
3. Exit
Enter your choice: 1
```

Figure 2 Admin and Student Screen

```
University Admission Management System
1. Admin
2. Student
3. Exit
Enter your choice: 1
Enter Admin Username: admin
Enter Admin Password: password

Admin Login Successful.
1. Edit Programs
2. View Application Status
3. Logout
Enter your choice: 2

Viewing Application Status:
Student Name: Hamza
Applied Program: BSCS
Status: Accepted

University Admission Management System
1. Admin
2. Student
3. Exit
Enter your choice: 
```

Figure 3 Admin (View Application)