School Management System

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Course:

CSC-102 Programming Fundamentals

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2. Project Description:

- The Main Purpose of This Project Is to Develop a School Management System Which Can Be Used to Manage The Daily School Tasks And Managements. This System Will Allow the User to do those tasks which is necessary for The Daily School Tasks and Managements.
- In The Field Of Computer Science, This Application Will Showcase A Handy Use Of File Handling For Building Console-Based Applications In C++ For Solving Real-World Problems And Their Professional Use.

3. Users of Application:

There Are Two Types Of Users and One Admin In The Application Based Upon Their Role. The Users Include:

- **Principal (admin):** Principal Can Add/Remove Teachers As well As Student .Can Add Announcement.
- **Teacher:** Teacher Can Take Attendance of Student and Also Update Arks of Student.
- **Student:** student can view updated marks sheet and attendance.

4. Functional Requirements:

Following is the functional requirements of USERS:

- **Principal Functional requirements:**

PRINCIPAL	1.Add Staff	Principal Can Add Staff And Provide Their Login Username And Password Also Update Their Profile
	2.View Added Staff	Principal Can View Added Staff With Their Profile Information

PRINCIPAL	3.RemoveAdded Teacher	Principal Can Remove Added Teacher By Searching With Their Username
	4. Search Staff Information	It Is Possible To Check Information Of Staff By Searching With Their Name
	5.Add Student	Principal Can Add Student And Provide Their Login Username And Password Also
	6.View Student	Can view added student also with their information of profile
	7.Search student	Can search student with their name also
	8.remove added student	Can remove added student by searching with their name
	9.Add Announcement	Can Add Announcement For Staff And Students
	10.Clear Announcement	Principal Can Clear Announcement Also
	11.Update Profile	Principal Can Update Profile With Their Information About It
	12.Update Username /Password	Principal Can Update Password And Username Also

- **Teacher Functional Requirements:**

TEACHER	1.Take Attendance	Teacher Can Take Attendance Of Those Student Which Is Added By Principal
	2.View Attendance	Updated Attendance Of Teacher Can Be Viewed.
	3.Add Marks	Marks Of Those Student Can Be Add Which Are Added By Principal
	4.View Marks	Can Viewed Add Mark Sheet Also
	5.Clear Attendance/Marks Sheet	Techer Can Clear Attendance And Marks Sheet Also.
	6.Topper Of Marks	Can Also Check Topper Of Marks Added.
	7.Add Announcement /View Announcement	Teacher Can Add Announcement And View Announcement From Principal And For Student.
	8.View Complain And Action On Complain	Teacher Can View Complain Of Student Added And Perform Action On It.
	9.Update Profile Information	Teacher Can Update Their Profile Information
	10.Update Username /Password	Teacher Can Update Their Username And Password Also

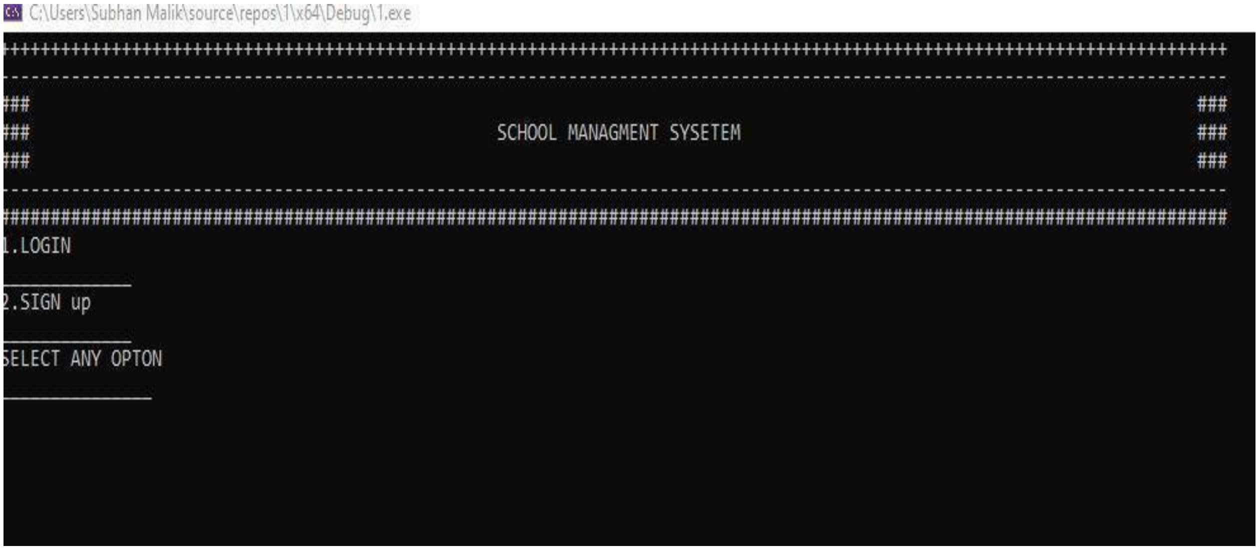
- **Student Functional Requirements:**

STUDENT	1.view attendance	Student can view attendance added by Teacher.
	2.view marks	Student can view marks and also see topper of marks.
	3.view announcement	Student can view announcement of principal and teacher.
	4.add complain	Student can add complain to the teacher.
	5.view action on complain	Student can view response of teacher over his complain.
	6.update profile information	Student can update their profile information also.
	7.view profile information	Student can view profile information.
	8.update username /password	Can update username and password

5. Wireframes:

Wireframes of the School management system are:

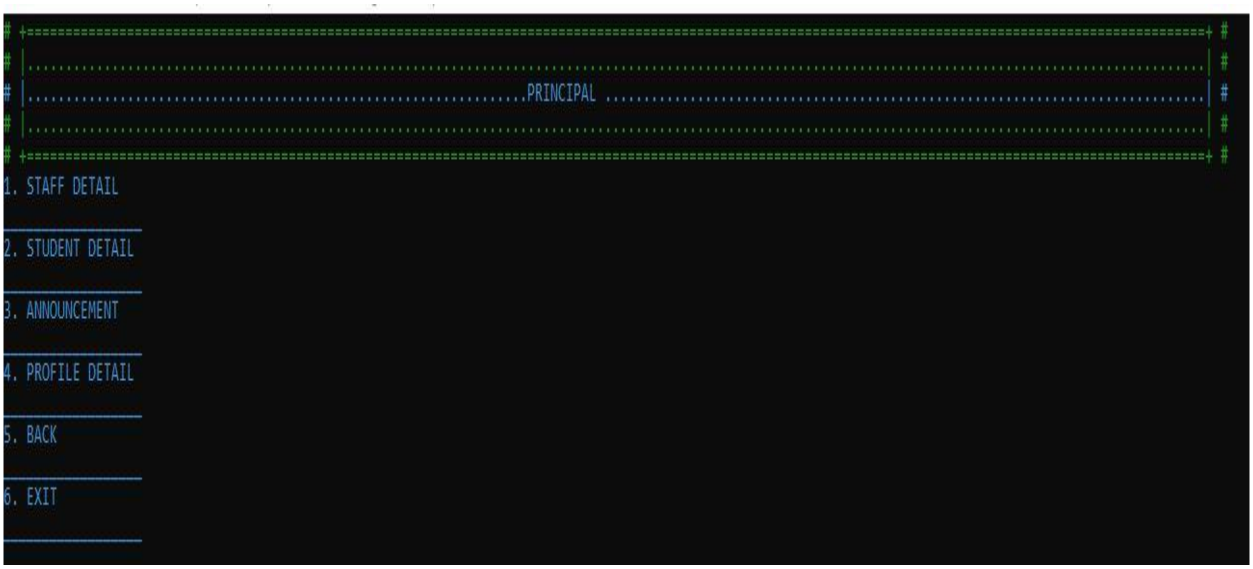
- **Basic Menu for all type of User**:



```
C:\Users\Subhan Malik\source\repos\1\x64\Debug\1.exe
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
----------------------------------------------------------------------------------------------------------------------------
###                                                                                                                      ###
###                                             SCHOOL MANAGMENT SYSETEM                                                 ###
###                                                                                                                      ###
----------------------------------------------------------------------------------------------------------------------------
############################################################################################################################
1.LOGIN
_____________
2.SIGN up
_____________
SELECT ANY OPTON
_______________
```

Figure 1 BASIC MENU

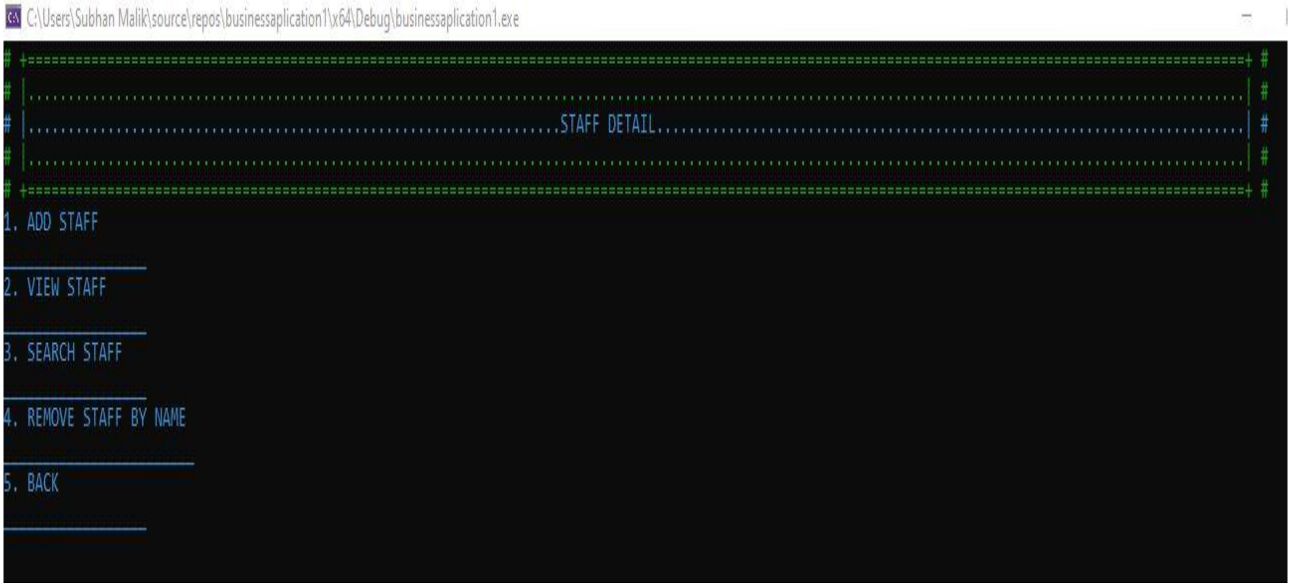
- **Principal Interface:**



```
# +========================================================================================================================+ #
# |......................................................................................................................| #
# |.................................................................PRINCIPAL ...........................................| #
# |......................................................................................................................| #
# +========================================================================================================================+ #
1. STAFF DETAIL
______________
2. STUDENT DETAIL
______________
3. ANNOUNCEMENT
______________
4. PROFILE DETAIL
______________
5. BACK
______________
6. EXIT
______________
```

Figure 2 Principal Interface

- **Staff Detail**

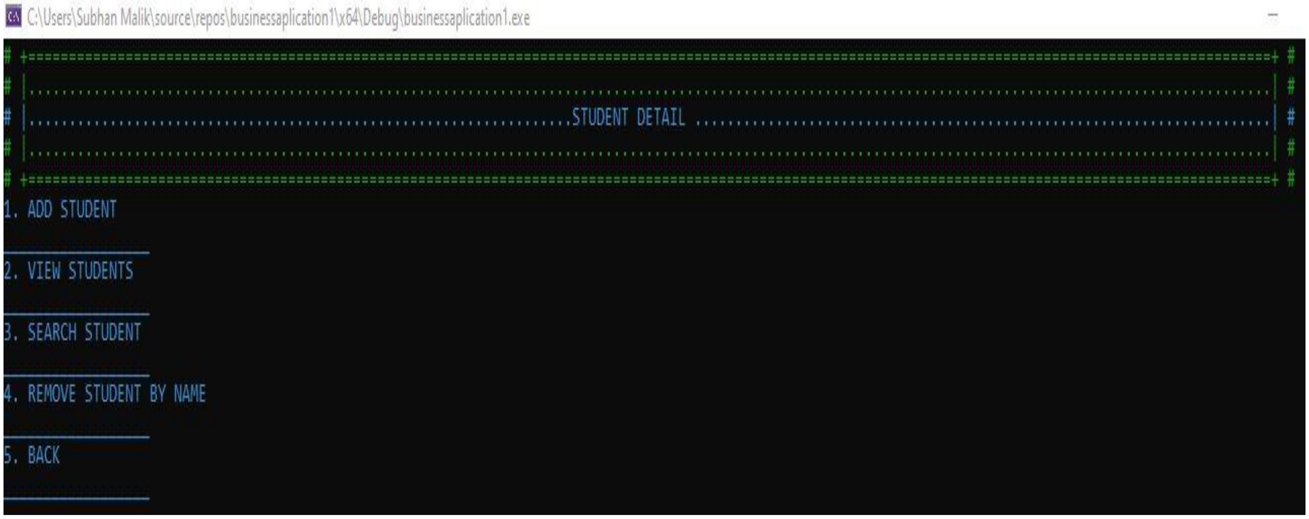


C:\Users\Subhan Malik\source\repos\businessaplication1\x64\Debug\businessaplication1.exe

```
# +==========================================================================================================+ #
# |..........................................................................................................| #
# |......................................................STAFF DETAIL........................................| #
# |..........................................................................................................| #
# +==========================================================================================================+ #
1. ADD STAFF
____________
2. VIEW STAFF
____________
3. SEARCH STAFF
____________
4. REMOVE STAFF BY NAME
________________
5. BACK
____________
```

Figure 3 Staff Detail

- **Student Detail**

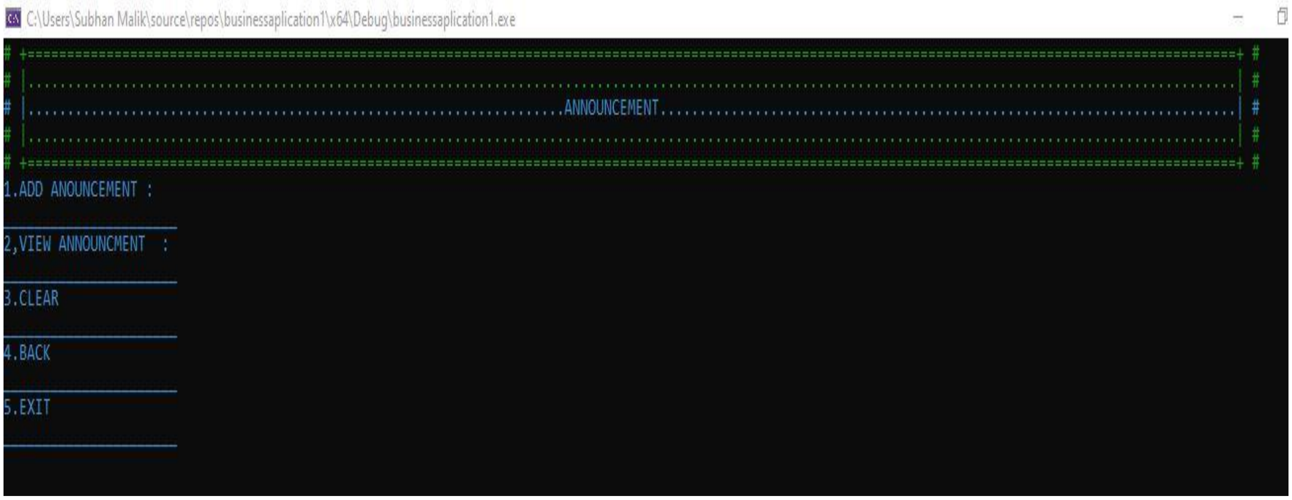


C:\Users\Subhan Malik\source\repos\businessaplication1\x64\Debug\businessaplication1.exe

```
# +==========================================================================================================+ #
# |..........................................................................................................| #
# |......................................................STUDENT DETAIL .....................................| #
# |..........................................................................................................| #
# +==========================================================================================================+ #
1. ADD STUDENT
____________
2. VIEW STUDENTS
____________
3. SEARCH STUDENT
____________
4. REMOVE STUDENT BY NAME
____________
5. BACK
____________
```

Figure 4 Student Detail

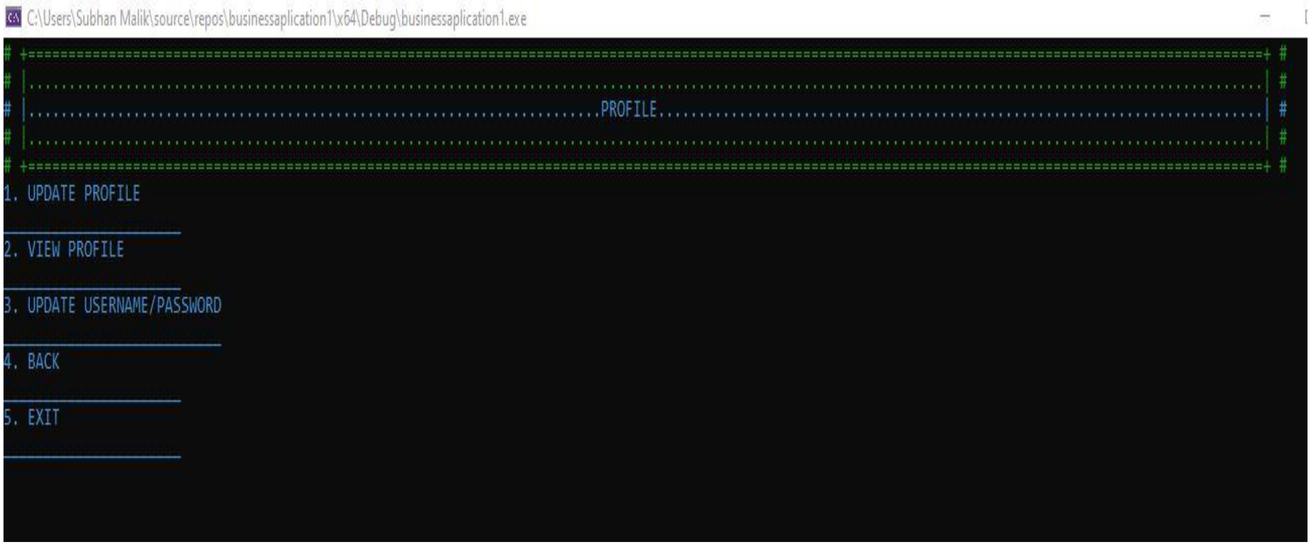
- **Announcement**



```
C:\Users\Subhan Malik\source\repos\businessaplication1\x64\Debug\businessaplication1.exe
# +==========================================================================================================+ #
# |..........................................................................................................| #
# |.....................................................ANNOUNCEMENT.........................................| #
# |..........................................................................................................| #
# +==========================================================================================================+ #
1.ADD ANOUNCEMENT :
_____________________
2,VIEW ANNOUNCMENT  :
_____________________
3.CLEAR
_____________________
4.BACK
_____________________
5.EXIT
_____________________
```

Figure 5 Announcement

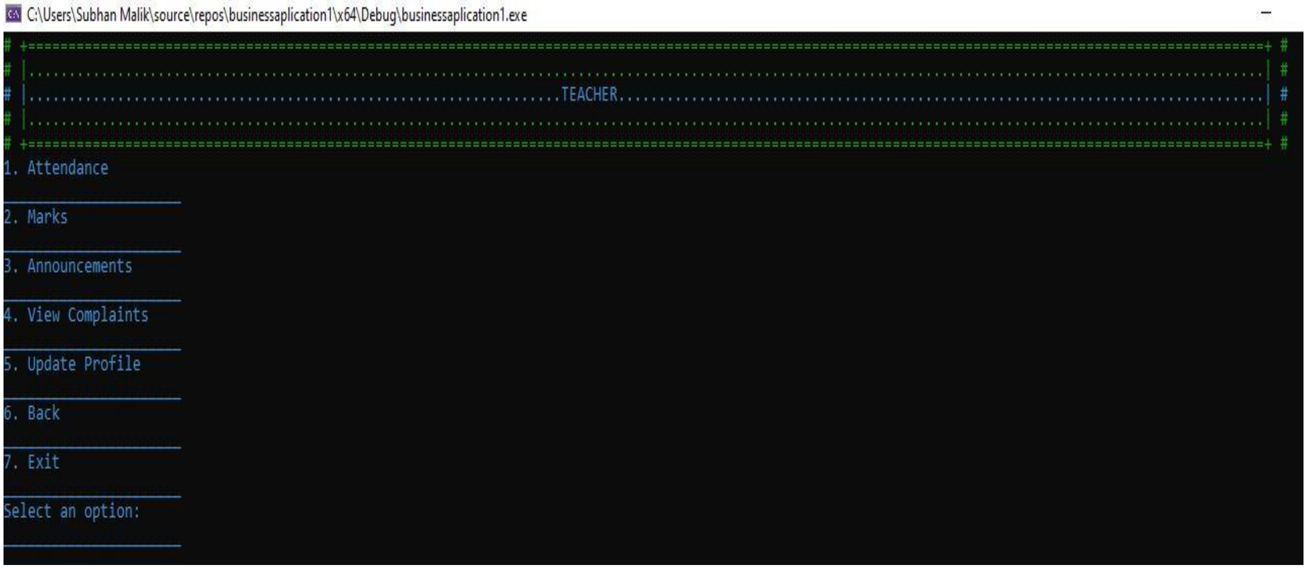
- **Profile Detail**



```
C:\Users\Subhan Malik\source\repos\businessaplication1\x64\Debug\businessaplication1.exe
# +==========================================================================================================+ #
# |..........................................................................................................| #
# |.......................................................PROFILE............................................| #
# |..........................................................................................................| #
# +==========================================================================================================+ #
1. UPDATE PROFILE
_____________________
2. VIEW PROFILE
_____________________
3. UPDATE USERNAME/PASSWORD
__________________________
4. BACK
_____________________
5. EXIT
_____________________
```

Figure 6   Profile Detail

- ## Teacher Interface

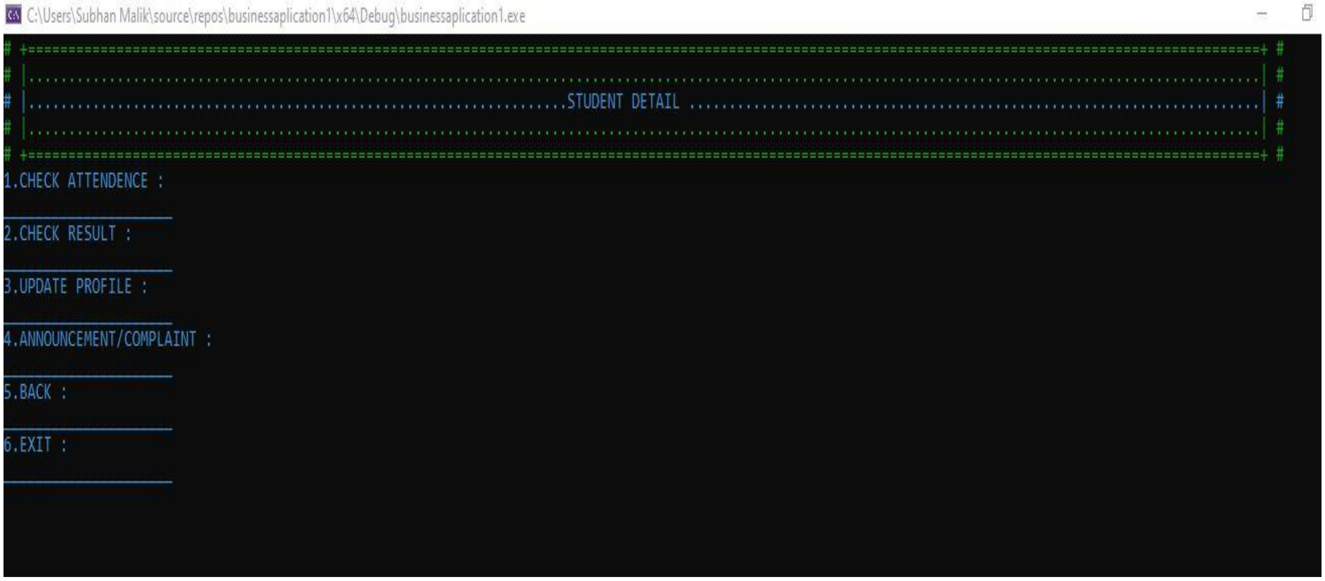


C:\Users\Subhan Malik\source\repos\businessaplication1\x64\Debug\businessaplication1.exe

```
# +==========================================================================================================================+ #
# |..........................................................................................................................| #
# |.................................................................TEACHER.................................................| #
# |..........................................................................................................................| #
# +==========================================================================================================================+ #
1. Attendance
______________________
2. Marks
______________________
3. Announcements
______________________
4. View Complaints
______________________
5. Update Profile
______________________
6. Back
______________________
7. Exit
______________________
Select an option:
______________________
```

Figure 7 Teacher Interface

- ## Student Interface



C:\Users\Subhan Malik\source\repos\businessaplication1\x64\Debug\businessaplication1.exe

```
# +==========================================================================================================================+ #
# |..........................................................................................................................| #
# |.................................................................STUDENT DETAIL .........................................| #
# |..........................................................................................................................| #
# +==========================================================================================================================+ #
1.CHECK ATTENDENCE :
_____________________
2.CHECK RESULT :
_____________________
3.UPDATE PROFILE :
_____________________
4.ANNOUNCEMENT/COMPLAINT :
_____________________
5.BACK :
_____________________
6.EXIT :
_____________________
```

Figure 8 Student Interface

6. Data Types:

- string staffUsername[number];
- string staffPassword[number];
- string tname[number];
- string tfathername[number];
- string tcinic[number];
- string tphone[number];
- string studentattendence[number][number];
- string studentUsername[number];
- string studentPassword[number];
- string sname[number];
- string sfathername[number];
- string scinic[number];
- string sphone[number];
- float marks[number][number];
- string subject[10];
- string studentcompalin[number]
- string staffUsername[number];
- string staffPassword[number];
- string tname[number];
- string tfathername[number];
- string tcinic[number];
- string tphone[number];

7. Function Prototypes

- void loadMarksheet(string studentNames[], float marks[][number], string subjects[], int& studentCount, int& subjectCount);
- void loadAttendance(string studentNames[], string attendance[][number], int& studentCount, int& attendanceCount);
- void loadstaffprivacy(string staffUsername[], string staffPassword[], int& staffCount);
- void loadstaffdetail(string tname[], string tfathername[], string tcinic[], string tphone[], int& staffCount);

- void loadstudentprivacy(string studentUsername[], string studentPassword[], int& studentCount);
- void studentdetail(string sname[], string sfathername[], string scinic[], string sphone[], int& studentCount);
- void storeStaffPrivacy(string staffUsername[], string staffPassword[], int& staffCount);
- void storeStaffDetail(string tname[], string tfathername[], string tcinic[], string tphone[], int& staffCount);
- void storeStudentPrivacy(string studentUsername[], string studentPassword[], int& studentCount);
- void storeStudentDetail(string sname[], string sfathername[], string scinic[], string sphone[], int& studentCount);
- void saveAllData(string staffUsername[], string staffPassword[], string tname[], string tfathername[], string tcinic[], string tphone[], int staffCount, string studentUsername[], string studentPassword[], string sname[], string sfathername[], string scinic[], string sphone[], int studentCount);
- void storeAttendance(string studentNames[], string attendance[][number], int studentCount, int attendanceCount);
- void storeMarksheet(string studentNames[], float marks[][number], string subjects[], int studentCount, int subjectCount);
- bool checkloginidentity(string inputUsername, string principalUsername, string principalPassword, string inputPassword, string& role, string staffUsername[], string staffPassword[], int staffCount, string studentUsername[], string studentPassword[], int studentCount);
- bool validateCNIC(string cnic);
- bool checkexistsoftecher(string username, string staffUsername[], int staffCount);

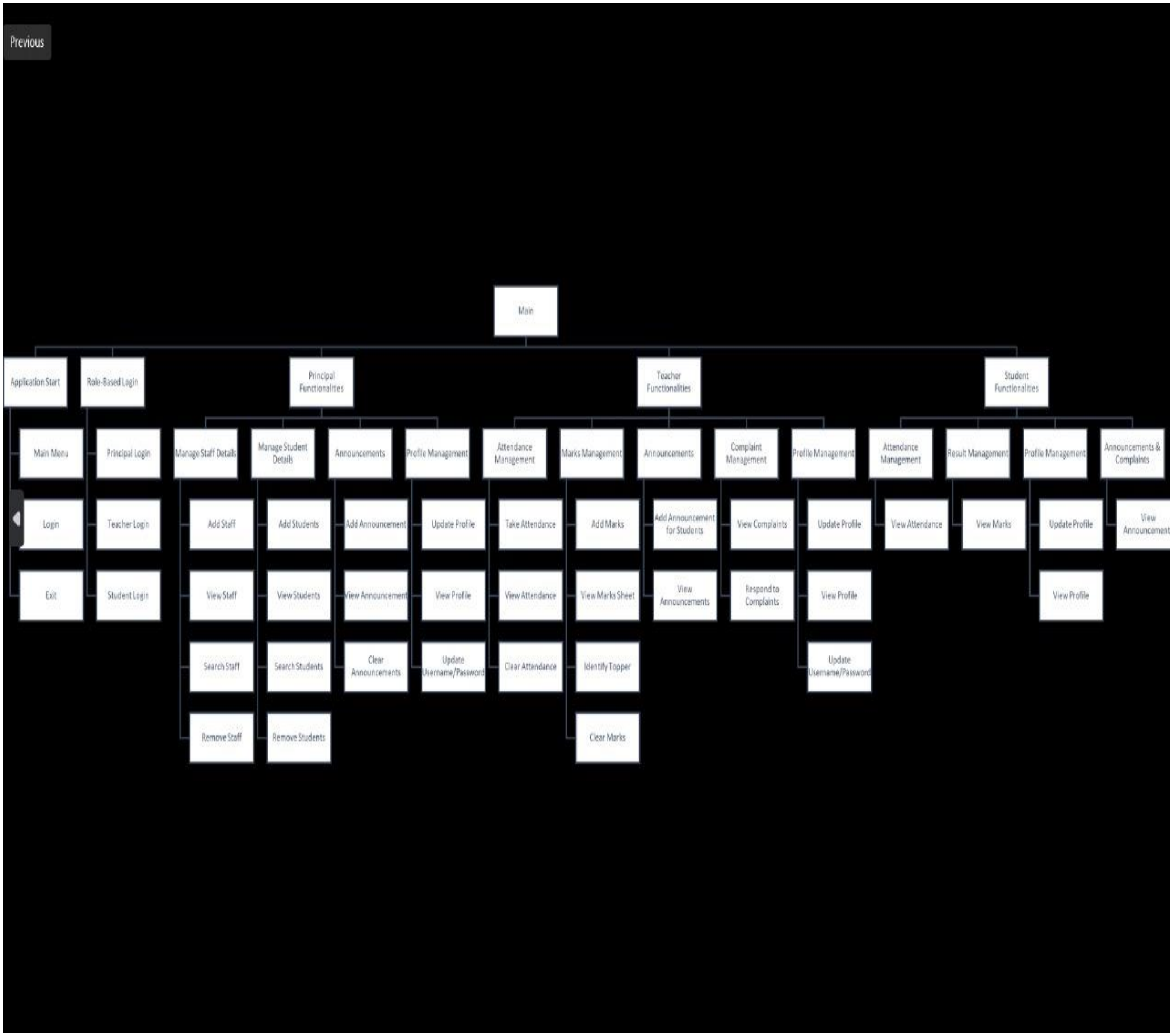
- bool validatePhoneNumber(string phone);
- bool isAlpha(char c);
- bool isDigit(char c);

- void clearMarks(int studentIndex, int subjectIndex, float marks[][number]);
- bool validateUsername(string username);
- bool validatePassword(string password);
- bool isspecial(char c);
- //working funtion

- void teacher(string staffUsername[], string staffPassword[], string tname[number], string tfathername[], string tcinic[], string tphone[], int& staffCount, string teacherannouncement[], string announ, string studentUsername[], string studentPassword[], string sname[], string sfathername[], string scinic[], string sphone[], int& studentCount, string studentattendence[][number], int& attendencecunt, float marks[][number], int& markscount, string subject[10], int& subjectcount, string studentcompalin[], int complainount, string compalinaction[], int& complainactioncount, int& announcemnetcount);
- void principal(string& principalUsername, string& principalPassword, string staffUsername[], string staffPassword[], string tname[], string tfathername[], string tcinic[], string tphone[], int& staffCount, string& announ, string studentUsername[], string studentPassword[], string sname[], string sfathername[], string scinic[], string sphone[], int& studentCount);

- void student(string staffUsername[], string staffPassword[], string tname[number], string tfathername[], string tcinic[], string tphone[], int& staffCount, string teacherannouncement[], string announ, string studentUsername[], string studentPassword[], string sname[], string sfathername[], string scinic[], string sphone[], int& studentCount, string studentattendence[][number], int attendencecunt, float marks[][number], int markscount, string subject[10], int subjectcount, string studentcompalin[], int& complainount, string compalinaction[], int complainactioncount, int announcemnetcount);

8. Functions Working Flow



9. Weaknesses in the Application

- No feature to recover forgotten usernames or passwords.
- The application lacks a graphical interface, making it less user-friendly for non-technical users.
- The current application uses arrays for data storage, which is static and not scalable.

10. Future Directions

- Feature of password /username recovery will be made possible in future
- Implement dynamic attendance and marks tracking, with options to export reports