



# **BVRIT HYDERABAD College of Engineering for Women**

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**Department of CSE(Artificial Intelligence and Machine Learning)**

## **OPERATING SYSTEM**

**Project Name : Security Access Control System**

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## **Problem Statement:**

Develop a security access control system using an operating system to regulate user access to system resources. Key objectives include implementing user authentication, defining authorization policies, protecting sensitive resources, logging user activities, and ensuring compliance with security standards. The system should prioritize usability, reliability, and seamless integration with existing system components.

## **Abstract:**

**Introduction:** This project focuses on developing a security access control system in C, prioritizing user-friendly implementation. The system aims to restrict access to specific areas or digital resources to authorized individuals, enhancing overall security.

**Implementation Details:** The system utilizes a straightforward approach, employing a structure to store user information and an array to manage user data. The implementation includes user registration and authentication functionalities, ensuring simplicity and ease of integration.

**Performance Analysis:** The system's effectiveness is evaluated through simulated scenarios, including high activity and potential security threats. Performance analysis assesses robustness and efficiency, ensuring the system remains effective in various situations.

**Conclusion:** This project simplifies security access control, emphasizing accessibility and effectiveness.

## Program:

```
#include <stdio.h>
#include <string.h>
#define MAX_USERS 10
struct User {
    char username[50];
    char password[50];
};
struct User users[MAX_USERS];
int isUsernameRegistered(const char *username) {
    for (int i = 0; i < MAX_USERS; i++) {
        if (strcmp(username, users[i].username) == 0) {
            return 1;
        }
    }
    return 0;
}
void registerUser(int index) {
    char newUsername[50];
    printf("Enter username: ");
    scanf("%s", newUsername);
    if (isUsernameRegistered(newUsername)) {
        printf("Username '%s' is already registered. Please try to login.\n", newUsername);
    }
    else {
        strcpy(users[index].username, newUsername);
        printf("Enter password: ");
        scanf("%s", users[index].password);
    }
}
```

```
printf("User registered successfully!\n");
}
}
int authenticateUser() {
char username[50];
char password[50];
printf("Enter username: ");
scanf("%s", username);
printf("Enter password: ");
scanf("%s", password);
for (int i = 0; i < MAX_USERS; i++) {
if(strcmp(username,users[i].username)==0&&strcmp(password, users[i].password)
== 0) {
return 1;
}
}
return 0;
}
int main() {
int choice;
int authenticated = 0;
while (1) {
printf("1. Register\n");
printf("2. Login\n");
printf("3. Exit\n");
printf("Enter your choice: ");
scanf("%d", &choice);
switch (choice) {
```

```
case 1:
registerUser(0);
break;
case 2:
authenticated = authenticateUser();
if (authenticated) {
printf("Authentication successful!\n");
} else {
printf("Authentication failed. Invalid username or password.\n");
}
break;
case 3:
printf("Exiting...\n");
return 0;
default:
printf("Invalid choice.\n");
}
}
return 0;
}
```

## OUTPUT :

```
1. Register
2. Login
3. Exit
Enter your choice: 1
Enter username: OSproject
Enter password: test@123
User registered successfully!
1. Register
2. Login
3. Exit
Enter your choice: 1
Enter username: OSproject
Username 'OSproject' is already registered. Please try to login.
1. Register
2. Login
3. Exit
Enter your choice: 2
Enter username: OSproject
Enter password: test@123
Authentication successful!
1. Register
2. Login
3. Exit
Enter your choice: 3
Exiting...
```