Solution of few questions

1. Write a sample program to check if the username and password from the user input is same as the saved user name and password. Print “Access Granted” if they are same otherwise print “Access Denied!!”. Using string comparison.

#include <stdio.h>

#include <string.h>

int main() {

char savedUserName[20] = "ProgrammingUser12";

char savedPassword[20] = "pAss123#";

char userInputUserName[20], userInputPassword[20];

printf("Enter username:");

scanf("%s",userInputUserName);

printf("Enter password:");

scanf("%s",userInputPassword);

int isUserNameSame = strcmp(savedUserName,userInputUserName);

int isUserPasswordSame = strcmp(savedPassword,userInputPassword);

if(isUserNameSame == 0 && isUserPasswordSame == 0){

printf("Access Granted");

}else{

printf("Access Denied!!");

}

return 0;

}

1. Write a program to print the following:  
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\* \* \* \*

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#include <stdio.h>

int main() {

int rows = 5;

int i, j;

for (i = 0; i < rows; i++) {

for (j = 0; j < i; j++) {

printf(" ");

}

for (j = i; j < rows; j++) {

printf("\* ");

}

printf("\n");

}

return 0;

}

1. If you need to store the marks of 5 students in 5 different subjects choosing any data structure (variable, one dimension array, two dimension array or structure).
2. State data structure you will choose with example and give reason of choosing the data structure.
3. Write program to take marks of 5 students in 5 different subjects from console and store in data structure of your choosing.
4. Display the total marks of each student in console.

Ans : For this scenario, I would choose a two-dimensional array to store the marks of 5 students in 5 different subjects. A two-dimensional array is suitable because it allows us to represent tabular data where each row represents a student and each column represents a subject. This makes it easy to access and manipulate the data efficiently.

#include <stdio.h>

int main() {

int marks[5][5];

// Input marks for each student and each subject

for (int i = 0; i < 5; i++) {

printf("Enter marks for student %d:\n", i + 1);

for (int j = 0; j < 5; j++) {

printf("Enter marks for subject %d: ", j + 1);

scanf("%d", &marks[i][j]);

}

}

printf("\nMarks stored successfully!\n");

// Display total marks of each student

printf("\nTotal marks of each student:\n");

for (int i = 0; i < 5; i++) {

int totalMarks = 0;

for (int j = 0; j < 5; j++) {

totalMarks += marks[i][j];

}

printf("Student %d: %d\n", i + 1, totalMarks);

}

return 0;

}

1. Write a c program to open a file name “student.dat”:
2. Read name, roll no and total marks of 5 student and write it in a file. You must take total marks out of 500.
3. Read all the data from the file “student.dat” and display information of students whose marks is greater than 400.
4. Read all the data from file and display the record of student whose name starts from character ‘A’.

Ans :

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#define MAX\_STUDENTS 5

#define MAX\_NAME\_LENGTH 50

struct Student {

char name[MAX\_NAME\_LENGTH];

int rollNo;

int totalMarks;

};

int main() {

FILE \*file;

struct Student students[MAX\_STUDENTS];

// Open file for writing

file = fopen("student.dat", "wb");

if (file == NULL) {

printf("Error opening file for writing.\n");

return 1;

}

//a. Write data to file

printf("Enter details of 5 students:\n");

for (int i = 0; i < MAX\_STUDENTS; ++i) {

printf("Enter name, roll no, and total marks for student %d:\n", i + 1);

scanf("%s %d %d", students[i].name, &students[i].rollNo, &students[i].totalMarks);

fwrite(&students[i], sizeof(struct Student), 1, file);

}

fclose(file);

// Open file for reading

file = fopen("student.dat", "rb");

if (file == NULL) {

printf("Error opening file for reading.\n");

return 1;

}

// b .Read and display students with marks greater than 400

struct Student student;

printf("\nStudents with marks greater than 400:\n");

while (fread(&student, sizeof(struct Student), 1, file) == 1) {

if (student.totalMarks > 400) {

printf("Name: %s, Roll No: %d, Total Marks: %d\n", student.name, student.rollNo, student.totalMarks);

}

}

//c. Display students whose names start with 'A'

printf("\nStudents whose names start with 'A':\n");

while (fread(&student, sizeof(struct Student), 1, file) == 1) {

if (student.name[0] == 'A') {

printf("Name: %s, Roll No: %d, Total Marks: %d\n", student.name, student.rollNo, student.totalMarks);

}

}

fclose(file);

return 0;

}

1. Write a program to create a file named “university.dat”. Write a program to keep the records on N colleges under Pokhara University. These records contain name, address and no\_of\_faculties of the college. Display the name of colleges located in Kathmandu.

Ans:   
  
#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#define MAX\_COLLEGES 100

// Structure to hold college information

struct College {

char name[50];

char address[100];

int no\_of\_faculties;

};

int main() {

struct College colleges[MAX\_COLLEGES];

int numColleges;

int choice;

FILE \*file;

int numRecords;

printf("1. Enter college details\n");

printf("2. Display colleges in Kathmandu\n");

printf("Enter your choice: ");

scanf("%d", &choice);

switch (choice) {

case 1:

printf("Enter the number of colleges under Pokhara University: ");

scanf("%d", &numColleges);

if (numColleges > MAX\_COLLEGES) {

printf("Maximum number of colleges exceeded.\n");

return 1;

}

for (int i = 0; i < numColleges; i++) {

printf("Enter details for college %d:\n", i + 1);

printf("Name: ");

scanf("%s", colleges[i].name);

printf("Address: ");

scanf("%s", colleges[i].address);

printf("Number of faculties: ");

scanf("%d", &colleges[i].no\_of\_faculties);

}

file = fopen("university.dat", "wb");

if (file == NULL) {

printf("Error opening file.\n");

exit(1);

}

fwrite(&numColleges, sizeof(int), 1, file); // Write number of colleges first

for (int i = 0; i < numColleges; i++) {

fwrite(&colleges[i], sizeof(struct College), 1, file);

}

fclose(file);

printf("College records written to file successfully.\n");

break;

case 2:

file = fopen("university.dat", "rb");

if (file == NULL) {

printf("Error opening file.\n");

exit(1);

}

fread(&numRecords, sizeof(int), 1, file);

struct College college;

printf("Colleges located in Kathmandu:\n");

for (int i = 0; i < numRecords; i++) {

fread(&college, sizeof(struct College), 1, file);

if (strstr(college.address, "Kathmandu") != NULL) {

printf("%s\n", college.name);

}

}

fclose(file);

break;

default:

printf("Invalid choice.\n");

break;

}

return 0;

}