1.

#include <stdio.h>

struct Student {

char name[50];

int age;

float gpa;

char favoriteSnack[30];

};

int main() {

struct Student hero;

scanf("%s", hero.name);

scanf("%d", &hero.age);

scanf("%f", &hero.gpa);

scanf("%29s", hero.favoriteSnack);

printf("\n--- Student Profile Unleashed ---\n");

printf("Name : %s\n", hero.name);

printf("Age : %d\n", hero.age);

printf("GPA : %.2f\n", hero.gpa);

printf("Snack of Choice: %s\n", hero.favoriteSnack);

printf("Status : Ready to conquer finals with snacks and brains.\n");

}

2.

#include <stdio.h>

struct Employee {

char name[50];

int id;

float salary;

char department[30];

};

int main() {

struct Employee agent;

scanf("%49s", agent.name);

scanf("%d", &agent.id);

scanf("%f", &agent.salary);

scanf("%29s", agent.department);

printf("\n=== Employee Confidential File ===\n");

printf("Name : %s\n", agent.name);

printf("ID : %d\n", agent.id);

printf("Salary : %.2f\n", agent.salary);

printf("Department : %s\n", agent.department);

printf("Verdict : Authorized for lunch breaks and mission-critical spreadsheets.\n");

}

3.

#include <stdio.h>

struct Employee {

char name[50];

int id;

float salary;

char department[30];

};

void displayAgent(struct Employee agent) {

printf("\n=== Classified Agent Profile ===\n");

printf("Name : %s\n", agent.name);

printf("ID : %d\n", agent.id);

printf("Salary : %.2f\n", agent.salary);

printf("Department : %s\n", agent.department);

printf("Status : Cleared for coffee and covert ops.\n");

}

int main() {

struct Employee agent;

scanf("%49s", agent.name);

scanf("%d", &agent.id);

scanf("%f", &agent.salary);

scanf("%29s", agent.department);

displayAgent(agent);

return 0;

}

4.

#include <stdio.h>

struct Student {

char name[50];

int age;

float gpa;

};

void showStudent(struct Student s) {

printf("\n>> Student Profile Loaded <<\n");

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

printf("Age : %d\n", s.age);

printf("GPA : %.2f\n", s.gpa);

printf("Note : Future CEO detected.\n");

}

int main() {

int i, count;

scanf("%d", &count);

struct Student nerds[100];

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

scanf("%49s", nerds[i].name);

scanf("%d", &nerds[i].age);

scanf("%f", &nerds[i].gpa);

}

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

showStudent(nerds[i]);

}

5.

#include <stdio.h>

struct Address {

char city[30];

int pin;

};

struct Student {

char name[50];

int age;

float gpa;

struct Address addr;

};

void showStudent(struct Student s) {

printf("\n>>> Student Data Vault <<<\n");

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

printf("Age : %d\n", s.age);

printf("GPA : %.2f\n", s.gpa);

printf("City : %s\n", s.addr.city);

printf("PIN Code : %d\n", s.addr.pin);

printf("Status : Enrolled and slightly over-caffeinated.\n");

}

int main() {

struct Student hero;

scanf("%49s", hero.name);

scanf("%d", &hero.age);

scanf("%f", &hero.gpa);

scanf("%29s", hero.addr.city);

scanf("%d", &hero.addr.pin);

showStudent(hero);

return 0;

}

6.

#include <stdio.h>

struct Marks {

int subject1;

int subject2;

int subject3;

};

struct Student {

char name[50];

struct Marks scores;

int total;

float average;

};

void calculate(struct Student \*s) {

s->total = s->scores.subject1 + s->scores.subject2 + s->scores.subject3;

s->average = s->total / 3.0;

}

void show(struct Student s) {

printf("\n📄 Student Score Report\n");

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

printf("Marks : %d, %d, %d\n", s.scores.subject1, s.scores.subject2, s.scores.subject3);

printf("Total : %d\n", s.total);

printf("Average : %.2f\n", s.average);

printf("Verdict : %s\n", s.average >= 50 ? "Graduation confirmed 🎓" : "Needs more snacks and studying 📚🍫");

}

int main() {

struct Student wizard;

scanf("%49s", wizard.name);

scanf("%d", &wizard.scores.subject1);

scanf("%d", &wizard.scores.subject2);

scanf("%d", &wizard.scores.subject3);

calculate(&wizard);

show(wizard);

return 0;

}

7.

#include <stdio.h>

struct Student {

char name[50];

int marks;

};

int main() {

int n, i, topIndex = 0;

scanf("%d", &n);

struct Student list[100];

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

scanf("%49s", list[i].name);

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

}

for (i = 1; i < n; i++) {

if (list[i].marks > list[topIndex].marks) {

topIndex = i;

}

}

printf("\n🏆 Top Scorer Detected!\n");

printf("Name : %s\n", list[topIndex].name);

printf("Marks : %d\n", list[topIndex].marks);

printf("Status: Brain operating at max efficiency.\n");

return 0;

}

8.

#include <stdio.h>

#include <string.h>

struct Student {

char name[50];

int marks;

};

void sortStudents(struct Student list[], int n) {

struct Student temp;

for (int i = 0; i < n - 1; i++) {

for (int j = i + 1; j < n; j++) {

if (strcmp(list[i].name, list[j].name) > 0) {

// Swap the student records

temp = list[i];

list[i] = list[j];

list[j] = temp;

}

}

}

}

void displayStudents(struct Student list[], int n) {

printf("\n=== Sorted Student Records ===\n");

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

printf("Name : %s, Marks: %d\n", list[i].name, list[i].marks);

}

}

int main() {

int n;

scanf("%d", &n);

struct Student list[100];

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

scanf("%49s", list[i].name);

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

}

sortStudents(list, n);

displayStudents(list, n);

return 0;

}

9.

#include <stdio.h>

union Data {

int intVal;

float floatVal;

char charVal;

};

int main() {

union Data data;

// Storing an integer value

data.intVal = 10;

printf("Integer value: %d\n", data.intVal);

// Storing a float value (overwrites the integer value)

data.floatVal = 3.14;

printf("Float value: %.2f\n", data.floatVal);

// Storing a char value (overwrites the float value)

data.charVal = 'A';

printf("Char value: %c\n", data.charVal);

// Demonstrating that the previous values are overwritten

printf("\nAfter overwriting:\n");

printf("Integer value: %d\n", data.intVal); // This will not give 10, it will show a garbage value

printf("Float value: %.2f\n", data.floatVal); // This will not give 3.14, it will show a garbage value

printf("Char value: %c\n", data.charVal); // This will show 'A'

return 0;

}

10.

#include <stdio.h>

struct Person {

char name[50];

int age;

float height;

};

union PersonUnion {

char name[50];

int age;

float height;

};

int main() {

// Using structure

struct Person person1;

person1.age = 30;

person1.height = 5.9;

snprintf(person1.name, sizeof(person1.name), "Alice");

// Using union

union PersonUnion person2;

person2.age = 30;

person2.height = 5.9;

snprintf(person2.name, sizeof(person2.name), "Alice");

// Displaying structure data

printf("Structure Person:\n");

printf("Name: %s\n", person1.name);

printf("Age: %d\n", person1.age);

printf("Height: %.2f\n", person1.height);

// Displaying union data

printf("\nUnion Person:\n");

printf("Name: %s\n", person2.name); // Displays name (last assigned)

printf("Age: %d\n", person2.age); // Displays garbage or overwritten value

printf("Height: %.2f\n", person2.height); // Displays height (last assigned)

// Checking the size of structure and union

printf("\nSize of structure: %lu bytes\n", sizeof(person1));

printf("Size of union: %lu bytes\n", sizeof(person2));

return 0;

}