**TUTORIAL 9 SOLUTIONS**

**Question 1**

#include <stdio.h>

#include <string.h>

struct food

{

char name[15];

int portion\_weight;

int calories;

};

int main()

{

struct food meal[10];

strcpy(meal[0].name, "apple");

meal[0].portion\_weight = 4;

meal[0].calories = 200;

printf("meal[0] consists of an %s which weighs %d ounces and contains %d calories\n", meal[0].name, meal[0].portion\_weight, meal[0].calories);

return 0;

}

**Question 2**

#include <stdio.h>

struct student

{

int age;

float weight;

float height;

};

void printStudentInfo(struct student X[100]);

int main()

{

struct student STD[100];

int count;

for (count = 0; count < 3; count++)

{

printf("Enter age of student: ");

scanf("%d", &STD[count].age);

printf("Enter weight of student: ");

scanf("%f", &STD[count].weight);

printf("Enter height of student: ");

scanf("%f", &STD[count].height);

}

printStudentInfo(STD);

return 0;

}

void printStudentInfo(struct student X[100])

{

int C;

printf("\nAge\tWeight\tHeight\n");

for (C = 0; C < 3; C++)

{

printf("%d\t%.2f\t%.2f\n", X[C].age, X[C].weight, X[C].height);

}

}

**Question 3**

#include <stdio.h>

struct complex

{

float real;

float imaginary;

};

int main(void)

{

struct complex x1 = { 1.3,4.6 };

struct complex x2,sum;

x2.real = 5.2;

x2.imaginary = 6.8;

sum.real = x1.real + x2.real;

sum.imaginary = x1.imaginary + x2.imaginary;

printf("The sum of the values are %.2f + %.2fj\n", sum.real, sum.imaginary);

return 0;

}

**Question 4**

#include <stdio.h>

struct std

{

int ID;

char name[50];

int mark;

};

int main(void)

{

struct std student[100];

int n,count;

printf("Enter number of students in the class: ");

scanf("%d", &n);

for (count = 0; count < n; count++)

{

printf("Enter student ID: ");

scanf("%d", &student[count].ID);

printf("Enter student name: ");

scanf("%s", student[count].name);

printf("Enter student grade: ");

scanf("%d", &student[count].mark);

}

printf("%-15s%-15s%-15s\n", "Student ID", "Student Name", "Mark");

for (count = 0; count < n; count++)

{

if (student[count].mark > 60 && student[count].mark < 80)

{

printf("%-15d%-15s%-15d\n", student[count].ID, student[count].name, student[count].mark);

}

}

return 0;

}

**Question 5**

#include <stdio.h>

struct HealthProfile

{

char FirstName[25];

char LastName[25];

char Gender[10];

int Year;

};

int main(void)

{

struct HealthProfile Patient;

printf("Enter the first name: ");

scanf("%s", Patient.FirstName);

printf("Enter the last name: ");

scanf("%s", Patient.LastName);

printf("Enter the gender: ");

scanf("%s", Patient.Gender);

printf("Enter the year of birth: ");

scanf("%d", &Patient.Year);

printf("\n%-15s %-15s %-15s %-15s %-15s\n", "First Name", "Last Name", "Gender", "Year of Birth", "Age");

printf("%-15s %-15s %-15s %-15d %-15d\n", Patient.FirstName, Patient.LastName, Patient.Gender, Patient.Year,2019-Patient.Year);

return 0;

}

**Question 6**

#include <stdio.h>

struct restaurant

{

char name[100];

char type[50];

float average\_cost;

};

void printOutput(struct restaurant IN[100], int C);

int main()

{

struct restaurant RES[50];

int dec = 1, count = 0;

while (dec == 1)

{

printf("Enter name of restaurant: ");

scanf("%s", &RES[count].name);

printf("Enter type of food served: ");

scanf("%s", &RES[count].type);

printf("Enter average cost per person: ");

scanf("%f", &RES[count].average\_cost);

count = count + 1;

printf("Do you want to continue? 1 for YES, 0 for NO: ");

scanf("%d", &dec);

}

printOutput(RES, count);

return 0;

}

void printOutput(struct restaurant IN[100], int C)

{

struct restaurant temp;

int n,swap;

while (1)

{

swap = 0;

for (n = 0; n < C - 1; n++)

{

if (IN[n].average\_cost > IN[n + 1].average\_cost)

{

temp = IN[n + 1];

IN[n + 1] = IN[n];

IN[n] = temp;

swap = 1;

}

}

if (swap == 0)

{

break;

}

}

printf("\n%-20s%-20s%-20s\n", "Restaurant Name", "Type of Food", "Average Cost per person");

for (n = 0; n < C; n++)

{

printf("%-20s%-20s%-20.2f\n", IN[n].name, IN[n].type, IN[n].average\_cost);

}

}