Q1

Code:

```
#include <stdio.h>
struct Car {
    char brand[50];
    int year;
    float price;
};
int main() {
    struct Car myCar;
    printf("Enter the brand of the car: ");
    scanf("%s", myCar.brand);
    printf("Enter the year of the car: ");
    scanf("%d", &myCar.year);
    printf("Enter the price of the car: ");
    scanf("%f", &myCar.price);
    printf("\nCar Details:\n");
    printf("Brand: %s\n", myCar.brand);
    printf("Year: %d\n", myCar.year);
    printf("Price: %f\n", myCar.price);
    return 0;
}
```

Output:

```
Enter the brand of the car: Toyota
Enter the year of the car: 2020
Enter the price of the car: 25000
Car Details:
Brand: Toyota
Year: 2020
Price: 25000.000000
```

Q2

Code:

```
#include <stdio.h>
struct Employee {
    int id;
    char name[50];
    float salary;
};
int main() {
    struct Employee employees[10];
    for (int i = 0; i < 10; i++) {
        printf("Enter details for employee %d:\n", i + 1);
        printf("ID: ");
        scanf("%d", &employees[i].id);
        printf("Name: ");
        scanf("%s", employees[i].name);
        printf("Salary: ");
```

```
        scanf("%f", &employees[i].salary);
    }
    printf("\nEmployees with salary greater than 50,000:\n");
    for (int i = 0; i < 10; i++) {
        if (employees[i].salary > 50000) {
            printf("ID: %d, Name: %s, Salary: %.2f\n", employees[i].id, employees[i].name,
employees[i].salary);
        }
    }
    return 0;
}
```

Output:

```
Enter details for employee 1:
ID: 101
Name: Trupal
Salary: 60000
Employees with salary greater than 50,000:
ID: 101, Name: , Salary: 60000.00
```

Q3

Code:

```
#include <stdio.h>
struct Rectangle {
    float length;
    float width;
};
float calculateArea(struct Rectangle rect) {
    return rect.length * rect.width;
}
int main() {
    struct Rectangle rect;
    printf("Enter the length of the rectangle: ");
    scanf("%f", &rect.length);
    printf("Enter the width of the rectangle: ");
    scanf("%f", &rect.width);
    float area = calculateArea(rect);
    printf("The area of the rectangle is: %f\n", area);
    return 0;
}
```

Output:

```
Enter the length of the rectangle: 10
Enter the width of the rectangle: 5
The area of the rectangle is: 50.000000
```

Q4

Code:

```
#include <stdio.h>
struct Employee {
   int id;
   char name[50];
   int age;
   int salary;
};
int main (void) {
   struct Employee employee[3];
   float avg;
   for(int i = 0; i < 3; i++) {
      printf("Detail of person %d \n", i + 1);
      printf("What is your Name: ");
      scanf("%s", employee[i].name);
      printf("What is your age: ");
      scanf("%d", &employee[i].age);
      printf("What is your id: ");
      scanf("%d", &employee[i].id);
      printf("What is your Salary: ");
      scanf("%d", &employee[i].salary);
   }
   avg = (employee[0].salary + employee[1].salary + employee[2].salary) / 3;
   for(int i = 0; i < 3; i++) {
      if(employee[i].salary > avg) {
         printf("Name: %s \nAge: %d \nID: %d \nSalary: %d \n", employee[i].name, employee[i].age,
employee[i].id, employee[i].salary);
      }
   }
}
```

Output:

```
Detail of person 1
What is your Name: Ishawn
What is your age: 30
What is your id: 101
What is your Salary: 50000
...
Name: Ishawn
Age: 30
ID: 101
Salary: 50000
...
```

Q5

Code:

```
#include <stdio.h>
#include <string.h>

struct Book {
   char title[100];
   char author[100];
```

```
    float price;
    int stock;
};
int main() {
    struct Book books[3];
    int i;
    for (i = 0; i < 3; i++) {
        printf("Enter details for book %d:\n", i + 1);
        printf("Title: ");
        scanf(" %[^\n]%*c", books[i].title); // To handle spaces in title
        printf("Author: ");
        scanf(" %[^\n]%*c", books[i].author); // To handle spaces in author
        printf("Price: ");
        scanf("%f", &books[i].price);
        printf("Stock: ");
        scanf("%d", &books[i].stock);
    }
    printf("\nBooks that are out of stock:\n");
    for (i = 0; i < 3; i++) {
        if (books[i].stock == 0) {
            printf("Title: %s\n", books[i].title);
            printf("Author: %s\n", books[i].author);
            printf("Price: %.2f\n\n", books[i].price);
        }
    }
    return 0;
}
```

Output:

```
Enter details for book 1:
Title: Programming Basics
Author: Aditya
Price: 499.99
Stock: 0
Enter details for book 2:
Title: Data Structures
Author: Messi
Price: 299.99
Stock: 5
Enter details for book 3:
Title: Algorithms 101
Author: Ishawn
Price: 399.99
Stock: 0

Books that are out of stock:
Title: Programming Basics
Author: Vincy
Price: 499.99

Title: Algorithms 101
Author: Jesat
```

Price: 399.99

Q6

Code:

```
#include <stdio.h>

struct Product {
   int id;
   char name[50];
   float price;
   float discount;
};
int main() {
   struct Product products[5];
   float finalPrice[5];
   for (int i = 0; i < 5; i++) {
      printf("Enter details for product %d:\n", i + 1);
      printf("ID: ");
      scanf("%d", &products[i].id);
      printf("Name: ");
      scanf("%s", products[i].name);
      printf("Price: ");
      scanf("%f", &products[i].price);
      printf("Discount: ");
      scanf("%f", &products[i].discount);
      finalPrice[i] = products[i].price - products[i].discount;
   }
   printf("\nProducts with final price below $100:\n");
   for (int i = 0; i < 5; i++) {
      if (finalPrice[i] < 100) {
         printf("Name: %s, Final Price: %f\n", products[i].id, products[i].name, finalPrice[i]);
      }
   }
   return 0;
}
```

Output:

```
Enter details for product 1:
ID: 121
Name: milk
Price: 225
Discount: 25
Enter details for product 2:
ID: 121
Name: book
Price: 50
Discount: 10
Enter details for product 3:
ID: 568
Name: pen
Price: 15
```

Discount: 5
Enter details for product 4:
ID: 56
Name: pencil
Price: 25
Discount: 5
Enter details for product 5:
ID: 568
Name: pen-pencil
Price: 35
Discount: 5
Name: book
Final Price: 40
Name: pen
Final Price: 10
Name: pencil
Final Price: 20
Name: pen-pencil
Final Price: 30

Q7

Code:

```
#include <stdio.h>

struct Movie {
   char title[100];
   char director[100];
   int release;
   float rating;
};

int main() {
   struct Movie movies[3];
   int i;
   for (i = 0; i < 3; i++) {
      printf("Enter details for movie %d:\n", i + 1);
      printf("Title: ");
      scanf(" %[^\n]%*c", movies[i].title); // To handle spaces in title
      printf("Director: ");
      scanf(" %[^\n]%*c", movies[i].director); // To handle spaces in director
      printf("Release Year: ");
      scanf("%d", &movies[i].release);
      printf("Rating: ");
      scanf("%f", &movies[i].rating);
   }
   printf("\nMovies released after the year 2000 with a rating above 8.0:\n");
   for (i = 0; i < 3; i++) {
      if (movies[i].release > 2000 && movies[i].rating > 8.0) {
         printf("Title: %s\n", movies[i].title);
         printf("Director: %s\n", movies[i].director);
         printf("Release Year: %d\n", movies[i].release);
         printf("Rating: %.1f\n\n", movies[i].rating);
      }
```

```
    }
    return 0;
}
```

Output:

```
Enter details for movie 1:
Title: Inception
Director: Christopher Nolan
Release Year: 2010
Rating: 8.8
Enter details for movie 2:
Title: The Matrix
Director: Lana Wachowski
Release Year: 1999
Rating: 8.7
Enter details for movie 3:
Title: Interstellar
Director: Christopher Nolan
Release Year: 2014
Rating: 8.6

Movies released after the year 2000 with a rating above 8.0:
Title: Inception
Director: Christopher Nolan
Release Year: 2010
Rating: 8.8

Title: Interstellar
Director: Christopher Nolan
Release Year: 2014
Rating: 8.6
```