Exercise 1

```c
#include <stdio.h>
#include <stdlib.h>

struct Student {    //结构体定义
    int id; //学生 ID
    char name[30];  //学生名字
    char gender[5]; //学生性别
    double scores[5];   //学生各科分数
    double avgScore;    //学生平均分数
};

void main(){
    double sum=0;
    struct Student stu; //定义学生 stu
    printf("Please input the student's ID : ");
    scanf("%d",&stu.id);
    printf("Please input the student's name : ");
    scanf("%s",&stu.name);
    printf("Please input the student's gender(boy / girl) : ");
    scanf("%s",&stu.gender);
    for(int i=0;i<5;i++){
        printf("Please input the student's score - %d/5 : ",i+1);
        scanf("%lf",&stu.scores[i]);
        sum+=stu.scores[i];
    }
    stu.avgScore=sum/5.0;   //计算平均分
    printf("\n");
    printf("The student's ID is : %d\n",stu.id);
    printf("The student's name is : %s\n",stu.name);
    printf("The student's gender is : %s\n",stu.gender);
    for(int i=0;i<5;i++){
        printf("The student's score - %d/5 is %lf: \n",i+1,stu.scores[i]);
    }
    printf("The student's avgscore is : %lf\n",stu.avgScore);
}
```

Case1:


```
C:\Users\cnyvf>cd "c:\Users\cnyvf\Documents\C\" && gcc
 Ex3.c -o Ex3 && "c:\Users\cnyvf\Documents\C\"Ex3
Please input the student's ID : 233455
Please input the student's name : hello
Please input the student's gender(boy / girl) : boy
Please input the student's score - 1/5 : 30
Please input the student's score - 2/5 : 40
Please input the student's score - 3/5 : 50
Please input the student's score - 4/5 : 60
Please input the student's score - 5/5 : 70

The student's ID is : 233455
The student's name is : hello
The student's gender is : boy
The student's score - 1/5 is 30.000000:
The student's score - 2/5 is 40.000000:
The student's score - 3/5 is 50.000000:
The student's score - 4/5 is 60.000000:
The student's score - 5/5 is 70.000000:
The student's avgscore is : 50.000000
```

Exercise 2

```c
#include <stdio.h>
#include <stdlib.h>

struct Student {    //结构体定义
    int id; //学生 ID
    char name[30];  //学生名字
    char gender[5]; //学生性别
    double scores[4];   //学生各科分数
    double avgScore;    //学生平均分数
};

void main(){
    struct Student stu[6]; //定义学生 stu
    int max=0;  //记录最大值
    int maxi;   //记录最大值的位置
    for(int n=0;n<6;n++){   //循环输入
        double sum=0;
        printf("Please input the %d/6 student's ID : ",n+1);
        scanf("%d",&stu[n].id);
        printf("Please input the %d/6 student's name : ",n+1);
        scanf("%s",&stu[n].name);
```

```
        printf("Please input the %d/6 student's gender(boy / girl) : ",n+1);
        scanf("%s",&stu[n].gender);
        for(int i=0;i<4;i++){
            printf("Please input the %d/6 student's score - %d/4 : ",n+1,i+1);
            scanf("%lf",&stu[n].scores[i]);
            sum+=stu[n].scores[i];
        }
        stu[n].avgScore=sum/4.0;   //计算平均分
        if(stu[n].avgScore>max){
            max=stu[n].avgScore;
            maxi=n;
        }
        printf("\n");
    }

    printf("\n");
    printf("The student's ID is : %d\n",stu[maxi].id);
    printf("The student's name is : %s\n",stu[maxi].name);
    printf("The student's gender is : %s\n",stu[maxi].gender);
    for(int i=0;i<4;i++){
        printf("The student's score - %d/5 is %lf: \n",i+1,stu[maxi].scores[i])
;
    }
    printf("The student's avgscore is : %lf\n",stu[maxi].avgScore);
}
```

Case1:


```
C:\Users\cnyvf>cd "c:\Users\cnyvf\Documents\C\" && gcc
 Ex3.c -o Ex3 && "c:\Users\cnyvf\Documents\C\"Ex3
Please input the 1/6 student's ID : 1
Please input the 1/6 student's name : a
Please input the 1/6 student's gender(boy / girl) : bo
y
Please input the 1/6 student's score - 1/4 : 1
Please input the 1/6 student's score - 2/4 : 1
Please input the 1/6 student's score - 3/4 : 1
Please input the 1/6 student's score - 4/4 : 1

Please input the 2/6 student's ID : 2
Please input the 2/6 student's name : b
Please input the 2/6 student's gender(boy / girl) : gi
rl
Please input the 2/6 student's score - 1/4 : 2
Please input the 2/6 student's score - 2/4 : 2
Please input the 2/6 student's score - 3/4 : 2
Please input the 2/6 student's score - 4/4 : 2

Please input the 3/6 student's ID : 3
Please input the 3/6 student's name : c
Please input the 3/6 student's gender(boy / girl) : boy
Please input the 3/6 student's score - 1/4 : 3
Please input the 3/6 student's score - 2/4 : 3
Please input the 3/6 student's score - 3/4 : 3
Please input the 3/6 student's score - 4/4 : 3

Please input the 4/6 student's ID : 4
Please input the 4/6 student's name : d
Please input the 4/6 student's gender(boy / girl) : girl
Please input the 4/6 student's score - 1/4 : 4
Please input the 4/6 student's score - 2/4 : 4
Please input the 4/6 student's score - 3/4 : 4
Please input the 4/6 student's score - 4/4 : 4

Please input the 5/6 student's ID : 5
Please input the 5/6 student's name : e
Please input the 5/6 student's gender(boy / girl) : boy
Please input the 5/6 student's score - 1/4 : 5
Please input the 5/6 student's score - 2/4 : 5
Please input the 5/6 student's score - 3/4 : 5
Please input the 5/6 student's score - 4/4 : 5

Please input the 6/6 student's ID : 6
Please input the 6/6 student's name : f
Please input the 6/6 student's gender(boy / girl) : girl
Please input the 6/6 student's score - 1/4 : 6
Please input the 6/6 student's score - 2/4 : 6
Please input the 6/6 student's score - 3/4 : 6
Please input the 6/6 student's score - 4/4 : 6


The student's ID is : 6
The student's name is : f
The student's gender is : girl
The student's score - 1/5 is 6.000000:
The student's score - 2/5 is 6.000000:
The student's score - 3/5 is 6.000000:
The student's score - 4/5 is 6.000000:
The student's avgscore is : 6.000000
```

Exercise 3

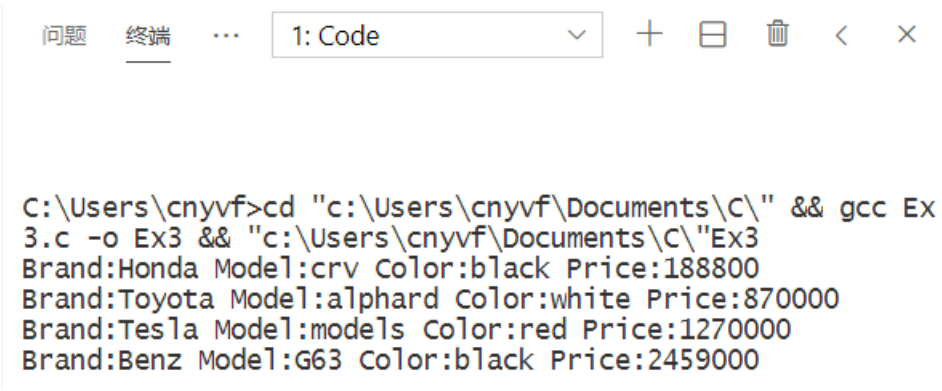
```c
#include <stdio.h>
#include <stdlib.h>

struct carSell {    //结构体定义
    char name[20];
    char model[20];
    char color[20];
    int price;
};

int cmp(const void *a, const void *b) { //快速排序判断函数
    struct carSell xx=*(struct carSell*)a;
    struct carSell yy=*(struct carSell*)b;
    return xx.price-yy.price;
}

void main() {
    struct carSell car[4]={{"Toyota","alphard","white",870000},{"Honda","crv","
black",188800},{"Tesla","models","red",1270000},{"Benz","G63","black",2459000}}
; //初始化
    qsort(car, 4, sizeof(car[0]), cmp); //快速排序
    for(int i=0;i<4;i++)
    {
        printf("Brand:%s Model:%s Color:%s Price:%d \n",car[i].name, car[i].mod
el,car[i].color,car[i].price);
    }
}
```

Case1:



Exercise 4

```c
#include <stdio.h>
#include <stdlib.h>

struct Student {    //结构体定义
    int id; //学生 ID
    char *name;  //学生名字
    char *gender; //学生性别
    double scores[4];   //学生各科分数
    double avgScore;    //学生平均分数
};

void main(){
    struct Student stu[6]; //定义学生 stu
    int max=0;  //记录最大值
    int maxi=0;   //记录最大值的位置
    struct Student *p;
    for(int n=0;n<6;n++){   //循环输入
        double sum=0;
        printf("Please input the %d/6 student's ID : ",n+1);
        scanf("%d",&stu[n].id);
        printf("Please input the %d/6 student's name : ",n+1);
        scanf("%s",&stu[n].name);
        printf("Please input the %d/6 student's gender(boy / girl) : ",n+1);
        scanf("%s",&stu[n].gender);
        for(int i=0;i<4;i++){
            printf("Please input the %d/6 student's score - %d/4 : ",n+1,i+1);
            scanf("%lf",&stu[n].scores[i]);
            sum+=stu[n].scores[i];
        }
        stu[n].avgScore=sum/4.0;   //计算平均分
        if(stu[n].avgScore>max){
            max=stu[n].avgScore;
            maxi=n;
        }
        printf("\n");
    }
    p = &stu[maxi];
    printf("\n");
    printf("The student's ID is : %d\n",p->id);
    printf("The student's name is : %s\n",&p->name);
    printf("The student's gender is : %s\n",&p->gender);
    for(int i=0;i<4;i++){
```

```
        printf("The student's score - %d/5 is %lf: \n",i+1,p->scores[i]);
    }
    printf("The student's avgscore is : %lf\n",p->avgScore);
}
```

Case1:


```
C:\Users\cnyvf>cd "c:\Users\cnyvf\Documents\C\" && gcc Ex
3.c -o Ex3 && "c:\Users\cnyvf\Documents\C\"Ex3
Please input the 1/6 student's ID : 1
Please input the 1/6 student's name : a
Please input the 1/6 student's gender(boy / girl) : boy
Please input the 1/6 student's score - 1/4 : 1
Please input the 1/6 student's score - 2/4 : 1
Please input the 1/6 student's score - 3/4 : 1
Please input the 1/6 student's score - 4/4 : 1

Please input the 2/6 student's ID : 2
Please input the 2/6 student's name : b
Please input the 2/6 student's gender(boy / girl) : girl

Please input the 2/6 student's score - 1/4 : 2
Please input the 2/6 student's score - 2/4 : 2
Please input the 2/6 student's score - 3/4 : 2
Please input the 2/6 student's score - 4/4 : 2

Please input the 3/6 student's ID : 3
Please input the 3/6 student's name : c
Please input the 3/6 student's gender(boy / girl) : boy
Please input the 3/6 student's score - 1/4 : 3
Please input the 3/6 student's score - 2/4 : 3
Please input the 3/6 student's score - 3/4 : 3
Please input the 3/6 student's score - 4/4 : 3

Please input the 4/6 student's ID : 4
Please input the 4/6 student's name : d
Please input the 4/6 student's gender(boy / girl) : girl

Please input the 4/6 student's score - 1/4 : 4
Please input the 4/6 student's score - 2/4 : 4
Please input the 4/6 student's score - 3/4 : 4
Please input the 4/6 student's score - 4/4 : 4

Please input the 5/6 student's ID : 5
Please input the 5/6 student's name : e
Please input the 5/6 student's gender(boy / girl) : boy
Please input the 5/6 student's score - 1/4 : 5
Please input the 5/6 student's score - 2/4 : 5
Please input the 5/6 student's score - 3/4 : 5
Please input the 5/6 student's score - 4/4 : 5

Please input the 6/6 student's ID : 6
Please input the 6/6 student's name : f
Please input the 6/6 student's gender(boy / girl) : girl

Please input the 6/6 student's score - 1/4 : 6
Please input the 6/6 student's score - 2/4 : 6
Please input the 6/6 student's score - 3/4 : 6
Please input the 6/6 student's score - 4/4 : 6


The student's ID is : 6
The student's name is : f
The student's gender is : girl
The student's score - 1/5 is 6.000000:
The student's score - 2/5 is 6.000000:
The student's score - 3/5 is 6.000000:
The student's score - 4/5 is 6.000000:
The student's avgscore is : 6.000000
```

Exercise 5

```c
#include <stdio.h>
#include <stdlib.h>

struct carSell {    //结构体定义
    char *name;
    char *model;
    char *color;
    int price;
};

int cmp(const void *a, const void *b) { //快速排序判断函数
    struct carSell xx=*(struct carSell*)a;
    struct carSell yy=*(struct carSell*)b;
    return xx.price-yy.price;
}

void main() {
    struct carSell car[4]={{"Toyota","alphard","white",870000},{"Honda","crv","
black",188800},{"Tesla","models","red",1270000},{"Benz","G63","black",2459000}}
; //初始化
    struct carSell *p;
    qsort(car, 4, sizeof(car[0]), cmp); //快速排序
    for(int i=0;i<4;i++)
    {
        *p=car[i];
        printf("Brand:%s Model:%s Color:%s Price:%d \n",p->name, p->model,p->co
lor,p->price);
    }
}
```

Case1: