

1. 编写一个自动出题程序，该程序可以给出任意两个数的加、减、乘、除运算式子。当用户输入运算结果后，程序可以判断正误。当用户做完十道题目之后，程序给出最终的统计结果。

源代码:

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

int main(){
    int add(int,int);
    int sub(int,int);
    int mult(int,int);
    float divi(int,int);
    float get_ans();
    bool judge(float,float);
    printf("Here are ten random calculation questions.
Please answer them.\n");
    srand((unsigned) time(NULL));
    int a,b,op,n,op_string;
    bool res;
    for(int i=1;i<=10;i++){
        a=(int) 10*(rand()/(float) RAND_MAX)+1;
        b=(int) 10*(rand()/(float) RAND_MAX)+1;
        op=(int) 4*(rand()/(float) RAND_MAX)+1;
        if (op==1){
            printf("No.%d:\033[4;1m%d+%d\n\033[0mYour
answer:",i,a,b);
            res=judge(get_ans(),(float) add(a,b));
            if (res){
                n++;
            }
        }
        else if(op==2){
            printf("No.%d:\033[4;1m%d-%d\n\033[0mYour
answer:",i,a,b);
            res=judge(get_ans(),(float) sub(a,b));
            if (res){
                n++;
            }
        }
        else if(op==3){
            printf("No.%d:\033[4;1m%d*%d\n\033[0mYour
answer:",i,a,b);
            res=judge(get_ans(),(float) mult(a,b));
```

```

        if (res){
            n++;
        }
    }
    else if(op==4){
        printf("No. %d: \033[4;1m%d/%d\n\033[0mYour
answer:", i, a, b);
        res=judge(get_ans(), divi(a, b));
        if (res){
            n++;
        }
    }
}
printf("End of answer.\nYou answered %d question(s)
correctly.\n", n);
}

int add(int a, int b){
    return a+b;
}

int sub(int a, int b){
    return a-b;
}

int mult(int a, int b){
    return a*b;
}

float divi(int a, int b){
    return (float)a/(float)b;
}

float get_ans(){
    float ans;
    scanf("%f", &ans);
    return ans;
}

bool judge(float a, float b){
    if(a==b){
        printf("\033[32mYour answer is
Correct!\033[0m\n");
    }
}

```

```
    else{  
        printf("\033[31mYour answer is  
Wrong!\033[0m\n");  
    }  
    return a==b;  
}
```

输出:

```
Here are ten random calculation questions. Please answer them.  
No.1:7/6  
Your answer:0  
Your answer is Wrong!  
No.2:5/10  
Your answer:0.2  
Your answer is Wrong!  
No.3:5+6  
Your answer:11  
Your answer is Correct!  
No.4:9-9  
Your answer:0  
Your answer is Correct!  
No.5:5-6  
Your answer:-1  
Your answer is Correct!  
No.6:4+8  
Your answer:12  
Your answer is Correct!  
No.7:2+1  
Your answer:3  
Your answer is Correct!  
No.8:4*1  
Your answer:4  
Your answer is Correct!  
No.9:3-10  
Your answer:-7  
Your answer is Correct!  
No.10:5*6  
Your answer:30  
Your answer is Correct!  
End of answer.  
You answered 8 question(s) correctly.
```

2. 自定义一个求 n 的阶乘的函数。在主函数中调用该函数，当用户输入非负数的时候，程序输出该数的阶乘；当用户输入负数的时候，程序退出。

源代码:

```
#include<stdio.h>
int main(){
    int factorial(int);
    while (true){
        printf("Please input a number, this progamme
will make a factorial for it.\n");
        printf("Your number is:");
        int num;
        scanf("%d",&num);
        if (num<0){
            printf("End of Progamme.\n");
            break;
        }
        printf("%d\'s factorial
is %d.\n",num,factorial(num));
    }
}

int factorial(int n){
    int res=1;
    for(int i=1;i<=n;i++){
        res=res*i;
    }
    return res;
}
```

输出:

```
Please input a number, this progamme will make a
factorial for it.
Your number is:3
3's factorial is 6.
Please input a number, this progamme will make a
factorial for it.
Your number is:4
4's factorial is 24.
Please input a number, this progamme will make a
factorial for it.
Your number is:-1
End of Progamme.
```

3. 自定义一个函数，判断字符是数字、小写字母、大写字母还是其它。返回值为 0 时，表示数字；为 1 时，表示小写字母；为 2 时，表示大写字母；为 3 时表示其它。在主函数中调用该函数，判断用户输入的字符是哪一种，并输出“是数字”、“是小写字母”、“是大写字母”、“其它”；当用户输入“#”的时候，程序退出。

源代码:

```
#include<stdio.h>
int main(){
    void judge(char);
    while (true){
        printf("Please input a character:");
        char letter;
        scanf("%c",&letter);
        getchar();
        if (letter==35){
            printf("End of Pragamme.\n");
            break;
        }
        else{
            judge(letter);
        }
    }
}

void judge(char chara){
    if(chara>=48 && chara<=57){
        printf("This is a number.\n");
    }
    else if(chara>=65 && chara<=90){
        printf("This is a capital.\n");
    }
    else if(chara>=97 && chara<=122){
        printf("This is a lowercase letter.\n");
    }
    else{
        printf("This is a other character.\n");
    }
}
```

输出:

```
Please input a character:a
This is a lowercase letter.
Please input a character:D
This is a capital.
Please input a character:4
This is a number.
```

```
Please input a character:)  
This is a other character.  
Please input a character:#  
End of Pragamme.
```