

实训五实训题目参考代码

1. 任意输入一行字符，分别统计字母、数字、空格和其它字符的个数。

```
/*
任意输入一行字符，分别统计字母、数字、空格和其它字符的个数。
*/
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <stdbool.h>

bool is_alphabet(char ch)
{
    return ('a' <= ch && ch <= 'z') || ('A' <= ch && ch <= 'Z');
}

bool is_digital(char ch)
{
    return '0' <= ch && ch <= '9';
}

bool is_space(char ch)
{
    return ' ' == ch;
}

int main()
{
    char str[65535];
    int alphabet, digital, space, other;

    gets(str);

    alphabet = 0;
    digital = 0;
    space = 0;
    other = 0;
    for (int i = 0; i < strlen(str); i++)
    {
        if (is_alphabet(str[i]))
        {
            ++alphabet;
        }
        else if (is_digital(str[i]))
        {
            ++digital;
        }
        else if (is_space(str[i]))
        {
            ++space;
        }
        else
        {

```

```

        ++other;
    }
}
printf("字母个数: %d\n", alphabet);
printf("数字个数: %d\n", digital);
printf("空格个数: %d\n", space);
printf("其他个数: %d\n", other);
return 0;
}

```

2. 打印1000 之内的所有完数。一个数如果正好等于它的因子之和，这个数就称之为完数。

```

#include <stdio.h>
#include <stdbool.h>

bool is_perfect_number(int n)
{
    int sum = 0;
    for (int i = 1; i < n; i++)
    {
        if (n % i == 0)
        {
            sum += i;
        }
    }
    return sum == n;
}

int main()
{
    for (int val = 1; val <= 1000; val++)
    {
        if(is_perfect_number(val))
        {
            printf("%d\n", val);
        }
    }
    return 0;
}

```

3. 实现菜单功能，当输入为“退出”的控制时结束。

```

*****
* 1---input                               *
* 2---search                             *
* 3---sort                               *
* 4---delete                             *
* 0---exit                               *
*****
please input your choice(0---4):

```

```

#include <stdio.h>

void menu_help()
{
    printf("*****\n");
    printf("* 1---input          *\n");
    printf("* 2---search          *\n");
    printf("* 3---sort             *\n");
    printf("* 4---delete           *\n");
    printf("* 0---exit             *\n");
    printf("*****\n");
    printf("please input your choice(0---4): ");
}

int main()
{
    int choose;

    while (menu_help(), scanf("%d", &choose), choose)
    {
        switch(choose)
        {
            case 1:
                printf("Input\n");
                break;
            case 2:
                printf("Search\n");
                break;
            case 3:
                printf("Sort\n");
                break;
            case 4:
                printf("Delete\n");
                break;
        }
    }
    return 0;
}

```

4. 编程实现10道+、-、*、/的运算。

```

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

#define TIMES(id, size) for(int id = 0; id < (size); id++)

void welcome_msg()
{
    printf("calculator 1.0.0\n");
    printf("Type Simple formula, e.g. 1 + 2\n");
}

int main()
{
    int a, b, ans;
}

```

```
char op;
welcome_msg();

TIMES(time_id, 10)
{
    printf(">>> ");
    scanf("%d %c %d",&a, &op, &b);
    switch(op)
    {
        case '+':
            ans = a + b; break;
        case '-':
            ans = a - b; break;
        case '*':
            ans = a * b; break;
        case '/':
            ans = a / b; break;
        default:
            printf("error\n");
            continue;
    }
    printf("%d\n", ans);
}

return 0;
}
```