

1 第一章

$$y = \sin(x) + \cos(x)$$

2 循环

while 循环输出平方数

1. 打印出小于某数的平方数

```
#include<stdio.h>

int main(void){
    int i, n;
    printf("This program prints a table of squares.\n");
    printf("Enter number of entries in table: \n");
    scanf("%d", &n);

    i = 1;
    while (i<=n){
        printf("%10d%10d\n", i, i * i);
        i++;
    }
    return 0;
}
```

2. 数列求和: sum.c

```
/* 数列求和*/

#include<stdio.h>

int main(void){
    int n, sum = 0;
    printf("This program sums a series of integers.\n");
    printf("Enter a integers (0 to terminate): ");

    scanf("%d", &n);
    while(n != 0){
        sum += n;
        scanf("%d", &n);
    }
    printf("The sum is: %d\n", sum);

    return 0;
}
```

do 语句

先执行一次函数体，再进行条件判断

3. do 语句

```
/* 计算数字的位数 */
#include<stdio.h>
int main(void){
    int digits = 0, n;
    printf("Enter a nonnegative integer: ");
    scanf("%d", &n);

    do {
        n /= 10;
        digits++;
    } while(n > 0);

    printf("The number has %d digit(s).\n", digits);

    return 0;
}
```

for 语句

4. for 循环计算平方数

```
include<stdio.h>
int main(void)
int i;
printf("This program prints a table of squares. \n")
printf("Enter number of entries in table: ");
scanf("d", &n);

for (i =1: i <=n: i++)
    printf("%10d%10d\n", i, i * i);

return 0
```

5. break 语句，跳出当前循环

```
/* 读入数字，j计算之和，遇到0则截止 */
#include<stdio.h>

int main(void){
    int n = 0, sum = 0;
    int i;
```

```

printf("Enter a series of integer.\n");
while (n < 5) {
    scanf("%d", &i);
    if (i == 0)
        break;
    sum += i;
    n++;
}
printf("The sum of integers is: %d", sum);
}

```

6. continue 语句，跳出当次循环，继续执行剩余循环

```

/* 读入数字，计算之和，遇到0,跳过当次循环，继续执行下次循环 */
#include<stdio.h>

int main(void){
    int n = 0, sum = 0;
    int i;
    printf("Enter a series of integer.\n");
    while (n < 5) {
        scanf("%d", &i);
        if (i == 0)
            continue;
        sum += i;
        n++;
    }
    printf("The sum of integers is: %d", sum);
}

```

数组

一维数组

1. 数组初始化
 2. 反向输出数列
-

```

// 反向输出数组
#include<stdio.h>
#define N 5

int main(void){
    int a[N], i;
    printf("Enter %d numbers: ", N);
    for (i = 0; i < N; i++)
        scanf("%d", &a[i]);
}

```

```

printf("In reverse order:");

for (i = N - 1; i >= 0; i--)
    printf(" %d", a[i]);
printf("\n");

return 0;
}

```

3. 数组初始化：如果初始化比数组短，后续元素默认为 0

```

int a[10] = {1,2,3,4};
// int a[10] = {1,2,3,4,5,0,0,0,0,0}
int a[10]={0};
// int a[10] = {0,0,0,0,0,0,0,0,0,0};
// 给定了所有元素，可省去个数
int a[] = {1,2,3,4,5,6,7,8,9,10};
// 指定位置元素为0, C99
int a[15] = {[2] = 29, [8] = 7, [14] = 100};
// 数组长度为24
int a[] = {[2] = 2, [23] = 11, [6] = 56};

```

4. 检查一个数是否有重复数字

```

// 检查数有没有重复数字
#include<stdbool.h> // only for c99
#include<stdio.h>
int main(void){
    bool digit_seen[10] = {false};
    int digit;
    long n;

    printf("Enter a number: ");
    scanf("%ld", &n);

    while (n > 0) {
        digit = n % 10;
        if (digit_seen[digit])
            break;
        digit_seen[digit] = true;
        n /= 10;
    }

    if (n > 0)
        printf("Repeated digit\n");
    else
        printf("No repeated digit\n");
    return 0;
}

```

}
