02020930_综合研究研究报告

1

> （1）写一个C程序，打印int、long、 double型变量所占的字节数、地址、各个字节的地址和内容。

```
int ia = 6;
long la = 7;
double da = 8;
main() {
    int i;
    printf("int %d          ,address %lx,size %d\n", ia, (long)&ia,
           sizeof(int));
    for (i = 0; i < sizeof(int); ++i) {
        printf("address  %lx ", (long)&ia + i);
        printf("value  %d ", *((&ia) + i));
    }
    printf("\n");

    printf("long %ld         ,address %lx,size %d\n", la, (long)&la,
           sizeof(long));
    for (i = 0; i < sizeof(long); ++i) {
        if (i % 2 == 0)
            printf("\n");
        printf("address  %lx ", (long)&la + i);
        printf("value  %ld ", *((&la) + i));
    }
    printf("\n");
    printf("double %lf,address %lx,size %d\n", da, (long)&da, sizeof(double));
    for (i = 0; i < sizeof(double); ++i) {
        if (i % 2 == 0)
            printf("\n");
        printf("address  %lx ", (long)&da + i);
        printf("value  %lf ", *((&da) + i));
    }
}int ia = 6;
long la = 7;
double da = 8;
main() {
    int i;
    printf("int %d          ,address %lx,size %d\n", ia, (long)&ia,
           sizeof(int));
    for (i = 0; i < sizeof(int); ++i) {
        printf("address  %lx ", (long)&ia + i);
        printf("value  %d ", *((&ia) + i));
    }
    printf("\n");

    printf("long %ld         ,address %lx,size %d\n", la, (long)&la,
           sizeof(long));
```

```
    for (i = 0; i < sizeof(long); ++i) {
        if (i % 2 == 0)
            printf("\n");
        printf("address  %lx ", (long)&la + i);
        printf("value  %ld ", *((&la) + i));
    }
    printf("\n");
    printf("double %lf,address %lx,size %d\n", da, (long)&da, sizeof(double));
    for (i = 0; i < sizeof(double); ++i) {
        if (i % 2 == 0)
            printf("\n");
        printf("address  %lx ", (long)&da + i);
        printf("value  %lf ", *((&da) + i));
    }
}
```

- 结果

```
C:\>\SRC\SIX\A.EXE
int 6          ,address 65a0194,size 2
address  65a0194 value  6 address  65a0195 value  7
long 7         ,address 65a0196,size 4

address  65a0196 value  7 address  65a0197 value  0
address  65a0198 value  1075838976 address  65a0199 value  544501353
double 8.000000,address 65a019a,size 8

address  65a019a value  8.000000 address  65a019b value  0.000000
address  65a019c value  0.000000 address  65a019d value  1.356172133331087860000
000000000000000000e+248
address  65a019e value  4.619681106642919470000000000000000000000e+281 address
65a019f value  3.363724832807256060000000000000000000000e+175
address  65a01a0 value  0.000000 address  65a01a1 value  4.261372677487060260000
000000000000000000e+257
```

2

> (2) 写一个C程序，打印stu型变量所占的字节数、地址、各数据项地址、内容和各个字节的内容。

```
typedef struct
{
int num;
unsigned char c;
unsigned char osi
unsigned char masm;
char name [20]
}stu;
```

> 提示:研究 sizeof的用法；可将任何一个变量的存储空间，看做一个数组。

```
typedef struct {
    int num;
    unsigned char c;
    unsigned char os;
    unsigned char masm;
    char name[20];
} stu;
```

```
8
9   main() {
10      int i = 0;
11      stu s;
12      s.num = 9;
13      s.c = '1';
14      s.os = '2';
15      s.masm = '3';
16      s.name[0] = 'L';
17      s.name[1] = 'i';
18      s.name[2] = 'L';
19      s.name[3] = '\0';
20
21      printf("size: %d,address: %lx\n", sizeof(s), (long)&s);
22      printf("num :    %d,address: %lx\n", s.num, (long)&(s.num));
23      for (i = 0; i < sizeof(int); ++i) {
24          printf("address  %lx ", (long)&(s.num) + i);
25          printf("value  %d ", *(&(s.num) + i));
26      }
27      printf("\n");
28      printf("c   :    %c,address: %lx\n", s.c, (long)&(s.c));
29      for (i = 0; i < sizeof(char); ++i) {
30          printf("address  %lx ", (long)&(s.c) + i);
31          printf("value  %c ", *(&(s.c) + i));
32      }
33      printf("\n");
34      printf("os  :    %c,address: %lx\n", s.os, (long)&(s.os));
35      for (i = 0; i < sizeof(char); ++i) {
36          printf("address  %lx ", (long)&(s.os) + i);
37          printf("value  %c ", *(&(s.os) + i));
38      }
39      printf("\n");
40      printf("masm:    %c,address: %lx\n", s.masm, (long)&(s.masm));
41      for (i = 0; i < sizeof(char); ++i) {
42          printf("address  %lx ", (long)&(s.masm) + i);
43          printf("value  %c ", *(&(s.masm) + i));
44      }
45      printf("\n");
46      printf("name:  %s,address: %lx\n", s.name, (long)&(s.name));
47      /* printf("%d", sizeof(char *)); */
48      for (i = 0; i < 20; i++) {
49          printf("address  %lx ", (long)&(s.name) + i);
50          printf("value  %c ", *((*(&s.name)) + i));
51      }
52      printf("\n");
53  }
```

- 结果

```
\src\six\b.c:
Turbo Link  Version 2.0  Copyright (c) 1987, 1988 Borland International

       Available memory 447576

C:\>\src\SIX\B.EXE
size: 25,address: 2f5ffc4
num :    9,address: 2f5ffc4
address  2f5ffc4 value  9 address  2f5ffc5 value  12849
c   :    1,address: 2f5ffc6
address  2f5ffc6 value  1
os  :    2,address: 2f5ffc7
address  2f5ffc7 value  2
masm:    3,address: 2f5ffc8
address  2f5ffc8 value  3
name:  LiL,address: 2f5ffc9
address  2f5ffc9 value  L address  2f5ffca value  i address  2f5ffcb value  L ad
dress  2f5ffcc value    address  2f5ffcd value  ♠ address  2f5ffce value  ► addr
ess  2f5ffcf value    address  2f5ffd0 value    address  2f5ffd1 value    addres
s  2f5ffd2 value    address  2f5ffd3 value    address  2f5ffd4 value  ▌address
 2f5ffd5 value    address  2f5ffd6 value  ↑ address  2f5ffd7 value  ♠ address  2
f5ffd8 value  ► address  2f5ffd9 value    address  2f5ffda value  è address  2f5
ffdb value  ♣ address  2f5ffdc value  :

C:\>_
```

3

> （3）写一个程序，这个程序的运行结果反映如下主题参数的存储空间与局部变量的存储空间，在函数运行后收回。

```
long *f(int a);
long res[2];
long p;
long l;
main() {
    long *a = f(5);
    p = a[0];
    l = a[1];

    printf("parm  %d ,address %lx\n", *(long *)a[0], p);
    printf("local %d ,address %lx\n", *(long *)a[1], l);
}

long *f(int parm) {
    int local = 1;
    local += parm;
    printf("parm  %d address %lx\n", parm, (long)&parm);
    printf("local %d address %lx\n", local, (long)&local);

    res[0] = (long)&parm;
    res[1] = (long)&local;

    /*     printf("parm %d ,address %lx\n", *(long *)res[0], res[0]);
        printf("parm %d ,address %lx\n", *(long *)res[1], res[1]); */
    return res;
}
```

- 结果

```
C:\>\SRC\SIX\C.EXE
parm  5 address 2e2ffdc
local 6 address 2e2ffd6
parm  738 ,address ffdc003a
local 738 ,address ffd6003a
```