

Section 1: Single Choice(2 marks for each item, total 20 marks)

- Which one below is **NOT** one of the integer types? _____.
A. int B. char C. double D. long
- In the following notations, _____ can express a character constant(字符常量) correctly.
A. '\x100' B. 125 C. '\08' D. '\'
- Which one below is NOT for "***x is in the range of [-10, 0]***"? _____.
A. $-10 \leq x, x \leq 0$ B. $x \leq 0 \& \& x \geq -10$
C. $!(x < -10 || x > 0)$ D. $-10 \leq x \leq 0$
- The conditional expression **$x \% 3$** in **`while (x%3) a++;`** is equivalent to _____.
A. $x \% 3 != 0$ B. $x \% 3 == 0$ C. $x \% 3 == 1$ D. $x \% 3 == 2$
- For the declaration: **`short int a[[3]={1,2,3,4,5};`**, the value of expression **`sizeof(a)`** is _____.
A. 10 B. 12 C. 24 D. unknown
- Given the following code fragment, the return value of function-call **`f(f(3))`** is _____.

```
int f(int k)
{
    static int a=1;
    return a*=k;
}
```


A. 1 B. 3 C. 6 D. 9
- Assume that: **`int a[2][3];`**, which can correctly make reference to array **`a`**? _____.
A. `a[1][3]` B. `a[2][2]` C. `a[2][!-1]` D. `a[-1][3]`
- Given: **`int a[5], *p=a+1;`**, the expression _____ is equivalent to the expression **`*p`**.
A. `a+1` B. `a[1]` C. `a[0]+1` D. `p[1]`
- For the declarations: **`char *s, str[10];`**, statement _____ is completely correct.
A. `strcpy(s, "hello");` B. `str="hello"+1;`

- for (n=1; n; n++) ;
14. The output of the following program is_____.

```
#include <stdio.h>
void s(int *a, int *b)
{
    int *m;
    m = a; a = b; b = m;
}
main()
{
    int a=1,b=2;
    s(&a, &b);
    printf("%d#%d#", a, b);
}
```

15. If all variables have been defined and declared in the following program, all the variables which can be used in function **fun()** are_____.

```
#include <stdio.h>
int a=1;
void fun(int x)
{
    static int y;
    .....
    return;
}
int z;
void main( )
{
    int b;
    fun(z);
}
```

Section 3: Read each of the following programs and answer questions (5marks for each item, total 30 marks)

1. The output of the following program is_____.

```
#include <stdio.h>

void strFun(char *t, char *s)
{
    int i=0, j=0;

    while (s[i]) i++;
    i--;
    while (i>=0) {
        if (s[i]>='a' && s[i]<='z') t[j]=s[i]-'a'+ 'A';
        else t[j]=s[i];
        i--;
        j++;
    }
    i++;
    while (t[j++] = s[i++]);
}

int main()
{
    char t[80], s[20]="abc123";
```

```

    strFun(t,s);
    printf("%s", t);
}

```

2. When input:

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the output of the following program is_____.

```

#include <stdio.h>
int a[10];

void Fun(int n)
{
    while (n>0)
        { a[n%10]+
          +;
          n=n/10;
        }
}

int main()
{
    int n,i,m,k;

    scanf("%d", &n);
    for (i=0; i<n; i++) {
        scanf("%d", &m);
        Fun(m);
    }
    k=0;
    for (i=0; i<9; i++)
        if (a[i]>a[k]) k=i;
    printf("%d:%d\n",k, a[k]);
}

```

3. The output of the following program is_____.

```

#include <stdio.h>

void func(int a[], int n)
{
    int i, j, temp;

    for (i = 0; i < n; i++) {
        for (j = i + 1; j < n; j++)
            if (a[j]>a[i]) {
                temp = a[j];
                a[j] = a[i];
                a[i] = temp;
            }
    }
}

int main()
{
    int a[]={6, 7, 9, 2, 3, 2, -1}, i, n;

    n=sizeof(a)/sizeof(int);
}

```

```

    func(a,n);
    for(i=0; i<n; i++) printf("%d ", a[i]);
}

```

4. When input:

```

4
2 3 4 1
5 6 1 1
7 1 8 1
1 1 1 1

```

the output of the following program is: _____

```

#include <stdio.h>
#define MAXN 10

```

```

int main()
{
    int n, i, j, a[MAXN][MAXN], sum=0;

    scanf("%d", &n);
    for (i=0; i<n; i++)
        for (j=0; j<n; j++)
            scanf("%d", &a[i][j]);
    for (i=n-1; i>=0; i--)
        for (j=n-1; j>=0; j--)
            if ((i==j) || (i+j==n-1)) sum += a[i][j];
    printf("%d ", sum);
    return 0;
}

```

5. The text file **input.txt** contains a line characters: **command -nud -r**. The following program will output: _____.

```

#include <stdio.h>
#include <malloc.h>

```

```

int main(void )
{
    FILE * fp;
    char * str[3];
    char ** strp;
    int i;
    char c;

    fp = fopen("input.txt", "r");
    for (i=0; i<3; i++) str[i] = (char *)malloc(100);
    fscanf(fp,"%s %s %s", str[0], str[1], str[2]);
    strp = str;
    i = 0;
    while ( i++ < 2 && (*++strp)[0] == '-' )
        while ( c=*++strp[0] ) putchar (c);
    fclose(fp);
}

```

6. When input: **happy#new#year@ZJU<ENTER>**, the following program will output _____.

```

#include <stdio.h>

int main()
{
    int word=0;
    char c;

    while ((c=getchar())!='\n')
    {
        if (c=='#') word=0;
        else if (c=='@') word = 1;
        else if (word==0 && c>='a' && c<='z')
            { c=c-'a'+'A';
              word=2;
            }
        else if (word==1 && c>='A' && c<='Z')
            { c=c-'A'+'a';
              word=2;
            }
        putchar(c);
    }
}

```

Section 4: According to the specification, complete each program (2 marks for each blank, total 20 marks)

1. Given an item of size v ($v \leq 10$), now to pack (装入) this item into the best fit bin (最适合的箱子) from the N ($N=6$) bins. The Best Fit means that to place the item in the tightest spot among all bins, i.e. have the least free room after packed. (所谓最合适是指装入后箱子的剩余空间最少) For example, if the free rooms of these N bins are **{9, 0, 8, 1, 10, 10}**, and the size of current item is **7**, the item should be packed into the **No.2** bin (bin number from **0**), and the free room of this bin will be **1**. (the free room before packing is **8**). Following program inputs the size of item, outputs the number of best fit bin and its free room after packed. Function **int Pack(int v)** return the number of best fit bin.

```

#include <stdio.h>
#define BinNum _____(1)_____

int a[BinNum]={9, 0, 8, 1, 10, 10};

int Pack(int v)
{
    int i, m;

    for(i=0; i<BinNum; i++) { /* Find the first bin which can be packed with v*/
        if (a[i] >= v) {
            m=i;
            _____(2)_____;
        }
    }

    for(i++; i < BinNum; i++) { /* Continue finding the best fit one in the left bins. */
        if ((a[i] >=v) && (_____(3)_____)) m=i;
    }

    a[m] = _____(4)_____;
    return m;
}

```

```

int main()
{
    int i,m,k;
    int n;

    scanf("%d", &n);
    m=_____(5)_____;
    printf("The item is packed into bin No.:%d:%d.\n ", m, a[m]);
}

```

2. There are two text files **input1.txt** and **input2.txt**, which contain some integers respectively. The following program will read in these integers, calculate the occurrence of each integer both in the two files, and store the result into another text file **output.txt**. For example:

input1.txt contains: **12 10 12 11 10 10 8**
input2.txt contains: **10 11 12 13 14 15 16**
output.txt will be generated with: **(12,3)(10,4)(11,2)**

```

#include <stdio.h>
#include <stdlib.h>
#define MAX 100

```

```

FILE * open_a_file (char *filename, char *mode)
{
    FILE *fp;

    if ((_____(6)_____) == NULL) {
        printf("Can't open file %s\n", filename);
        exit(-1);
    }
    return fp;
}

```

```

int exist(int val, int arr[], int n)
{
    int i;

    for (i=0; i<n; i++) if ( val == arr[i] ) return i;
    return -1;
}

```

```

main()
{
    int i,n,num;
    int a[MAX],b[MAX];
    FILE * ifp1, * ifp2, * ofp;

    ifp1 = open_a_file("input1.txt", "r");
    ifp2 = open_a_file("input2.txt", "r");
    ofp = open_a_file("output.txt", "w");

    for (i=0; i<MAX; i++) b[i] = 0;
    num = 0;
    while ( fscanf(ifp1, "%d", &n) == 1 ) {
        /*NOTE: fscanf() return the actual number of data which have been read in.*/

```

```

for (i=0; i<num; i++) if (n == _____(7)_____) break;
if ( i == num ) {
    a[num] = n;
    b[num]++; num++;
} else {
    _____(8)_____;
}
}

while ( fscanf(ifp2, "%d", &n) == 1 ) { i = (9)_____;
    if ( i != -1 ) b[i]++;
}

for (i=0; i<num; i++) {
    if (b[i] > 1) fprintf(_____(10)_____, "(%d,%d)", a[i], b[i]);
}

fclose(ifp1); fclose(ifp2); fclose(ofp);
}

```


Section 1: Single Choice(2 marks for each item, total 20 marks)

- 1 C 2 B 3 A/D 4 A 5 B
6 D 7 D 8 B 9 D 10 C

Section 2: Fill in the blanks (2 marks for each item, total 30 marks)

- 1 11111111 10000001 2 1
3 1 4 8
5 7#3# 6 e#orld#
7 6 8 fprintf(stdout,"Hello,world");
9 6 10 24
11 6#5# 12 -1
13 0 14 1#2#
15 a,x,y

Section 3: Read each of the following programs and answer questions (5 marks for each item, total 30 marks)

1 _____ 321CBAabc123 _____

2 _____ 1:5 _____

3 _____ 9 7 6 3 2 2 -1 _____

4 _____ 21 _____

5 _____ nudr _____

6 _____ Happy#New#Year@zJU _____

Section 4: According to the specification, complete each program (2 marks for each blank, total 20 marks)

(1) _____ 6 _____ (2) _____ break _____

(3) _____ a[i] < a[m] _____ (4) _____ a[m] - v _____

(5) _____ Pack(n) _____ (6) _____ fp=fopen(filename,mode) _____

(7) _____ a[i] _____ (8) _____ b[i]++ _____

(9) _____ exist(n, a, num) _____ (10) _____ ofp _____