Introduction to Computer Science and C Programming-Quiz3

2016/12/28

ID:_____ Name:_____

pts Total, 30 min

※If you don't understand particular English word, you may ask the teaching assistant to assist you.
※No Discussion. We will ask you to leave and give you zero point if any suspicious behavior is found

1. (10pts) True or False (*Please fill T/F in the blank***)**

_____ (1) *scanf()* is exactly identical to *fscanf()* with *stdin* as the first argument. T

_____ (2) The *sprintf* function writes output into a character array (pointed to by its first argument) instead of a stream. T

_____ (3) "*strcmp(str1, str2);*" returns 1 if *str1* is equal to *str2*. F => will return 0

_____ (4) To allocate a dynamic char array with size 5, you can use "*char *str = (char *) malloc(5);*" T

_____ (5) "*r+*" mode in *fopen* will open a file for both reading and writing. T

2. (24pts) **Multiple Selection Questions** *(There may exist one or more than one answer. You will lose 3 pts till there is no pts to lose for one wrong choice in each question)*

(1) Which of the following statements about file I/O are **true**? BD

ANS:_____

(A) When a file is opened for appending ("*a*"mode), data written to the file is added at the ~~beginning~~. end
(B) *fopen* returns a file pointer. When it can't open a file, *fopen* returns a null pointer.
(C) ~~*<stdlib.h>*~~ header is the primary repository of input/output functions, including *printf*, *scanf*, *fopen*, *fclose*, etc. <stdio.h>
(D) *fscanf(fp, "%d,%d", &i, &j)* will return 2 if it successfully reads two integers from *fp*.
(E) C supports two kinds of files: text and binary. To store a number '12' in a ~~binary~~ file, the format of it will be '00110001 00110010'. (ASCII code of '0' is 00110000) text

(2) Given a linked list. p is a pointer to the second-last node, s is a pointer to a new node that is going to be inserted. Which of following statements can **insert *s* to the last of linked list correctly**? ACD

ANS:_____

(A) p = (*p).next;	(*s).next = p -> next;	(*p).next = s;
(B) p = p -> next;	s -> next = p;	p -> next = s;
(C) s -> next = NULL;	p = p -> next;	p -> next = s;
(D) p = p -> next;	s -> next = p -> next;	p -> next = s;
(E) s -> next = p -> next -> next;		p -> next = s;

(3) Which of following are **valid statements that assign "Hello!" to a character array *str*** and won't cause a program crash? BDE

ANS:_____

(A) char str[10]; str = "Hello!";
(B) char str[10] = "Hello!";
(C) char str[10]; strcpy("Hello!", str); // <*string.h*> is included
(D) char str[10] = {'H', 'e', 'l', 'l', 'o', '!', '\0'};
(E) char str[10]; scanf("%s", str); // You type "Hello!" during the execution of the program

3. **(30pts) Please write the output of following program**
(Please write "???" if the output value is indeterminate.)

```c
#include <stdio.h>

void copy0(int **a, int *b){
    *a = b;
}
void copy1(int **a, int *b){
    **a = *b;
}
void copy2(int *a, int **b){
    a = *b;
}
void copy3(int *a, int **b){
    *a = **b;
}
void copy4(int **a, int **b){
    *a = *b;
}

int main(){
    int a[5] = {-1};
    int b[] = {0, 1, 2, 3, 4};

    int *a0 = &a[0], *a1 = &a[1], *a2 = &a[2], *a3 = &a[3], *a4 = &a[4];
    int *b0 = &b[0], *b1 = &b[1], *b2 = &b[2], *b3 = &b[3], *b4 = &b[4];

    copy0(&a0, b0);
    copy1(&a1, b1);
    copy2(a2, &b2);
    copy3(a3, &b3);
    copy4(&a4, &b4);

    int i;
    for(i = 0; i < 5; i++){
        printf("a[%d] = %d\n", i, a[i]);
    }

    printf("*a0 = %d\n", *a0);
    printf("*a1 = %d\n", *a1);
    printf("*a2 = %d\n", *a2);
    printf("*a3 = %d\n", *a3);
    printf("*a4 = %d\n", *a4);
    return 0;
}
```

Ans:

a[0] = -1	*a0 =0
a[1] = 1	*a1 =1
a[2] = 0	*a2 =0
a[3] = 3	*a3 =3
a[4] = 0	*a4 =4

4. (20pts) Please write the output of following program
(Please write "???" if the output value is indeterminate.)

```c
#include <stdio.h>

void fun0();

int a;

void fun1(int a) {
    printf("%d\t", a);
    ++a;
}
void fun2(int *a) {
    printf("%d\t", *a);
    ++*a;
}
int main() {
    int *p = &a;
    int a = 5;

    fun0();
    fun1(a);
    fun2(p);

    int i;
    for(i = 0; i < 100; ++i)  {
        int a = 0;
        a++;
    }
    printf("%d", a);

    printf("\n");

    if(*p < 4) {
        int a;
        a = 9;
        fun0();
        fun1(a);
        fun2(p);

        printf("\n");

    }
    fun0();
    fun1(a);
    fun2(p);

    return 0;
}

void fun0() {
    static int a;
    printf("%d\t", a);
    a += 2;
}
```

Ans:

```
0       5       0       5

2       9       1

4       5       2
```

5. (16pts) Given a program and its input file on the right side. Each file is ended with an empty line, and each line of files is ended with a letter, which means there are no space at the end of the lines.
Please write down the output of each question.

```
int main(){
    int n=0,m=0;
    char a;
    FILE *fptr;
    fptr=fopen("1.txt","r");
    do{
        a=fgetc(fptr);
        if(n%5==0){
            putchar(a);
        }
        else if(n%5==2){
            putchar(a);
        }
        n++;
    }while(a!=EOF);
    return 0;
}
```

1 - 記事本

檔案(F) 編輯(E) 格式(O)

```
A 2 P
P L E ELEM E
B 3 Q
Q M D DQDM DA
```

```
int main(){
    int n;
    char a,b,c,d,e,f[100],g[100];
    FILE *fptr;
    fptr=fopen("2.txt","r");
    fscanf(fptr,"%c%d%c",&a,&n,&b);
    fscanf(fptr,"%c%c%c%s%c",&c,&d,&e,g,&f);
    printf("%c%c%c%c%c%s%c",a,b,c,d,e,g,f);
    return 0;
}
```

2 - 記事本

檔案(F) 編輯(E) 格式(O)

```
A 2 P
P L E ELEM E
```

ANS:

(1)
A2
EEME QM Q A

(2)
A P
PL