

2011.1 Final Exam : C Programming

Student Id. : (_____) , Name : (_____)

* You may use standard library function in your answers.

1. (10points) Implement **strcat** function.

```
/* strcat appends a copy of the source string to the destination string. */
```

```
void strcat(char* des , char* src)
```

```
{  
  
}  
}
```

2. (15points) Fill out following blanks (1) ~ (5).

```
void swap( (1) _____ , (2) _____ )
```

```
{  
    (3) _____  
    // swap switches integer values of two argument variables  
  
}  
}
```

```
#include <stdio.h>  
int main()  
{  
    int x=3,y=1;  
    swap( (4) _____ , (5) _____ );  
    printf("x=%d,y=%d\n",x,y);  
    return 0;  
}
```

Output (Execution Result) :

x=1,y=3

3. (15points) Implement **getSumAndMean** function by filling out empty boxes (1) and (2) in the following C code. The function computes sum and mean from an input array.

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
void getSumAndMean( (1) _____ )
```

```
{  
    (2) _____  
  
}  
}
```

```
int main()  
{  
    int i, N;  
    float *a,sum=0.0,mean=0.0;  
    printf("How many elements? ");  
    scanf("%d",&N);  
    a=(float*)malloc(sizeof(float)*N);  
    printf("Input %d float values.\n",N);  
    for (i=0;i<N;i++) scanf("%f",&a[i]);  
    getSumAndMean(a,N,&sum,&mean);  
    printf("sum=%f,mean=%f\n",sum,mean);  
    free(arr);  
    return 0;  
}
```

4.(15points) Fill out following blanks with appropriate English words.

- (1) The (a. _____) sets its argument as the seed for a new sequence of (pseudo-)random integers to be returned by **rand()**.
- (2) C provides (b. _____) mechanism where the value of argument variable is copied to parameter variable and the value of argument variable is not affected during the processing of the function.
- (3) (c. _____) is a function that calls itself within the program text.
- (4) (d. _____) are accessible from anywhere in the program.
 (e. _____), on the other hand, are created during function calls for temporary use and are accessible only within the functions that create them.

5.(15points) (1) What does **malloc()** function do? explain in detail.

(_____)

(2) What does **malloc()** function returns? explain in detail.

(_____)

(3) Explain the advantage and the disadvantage of using macro function compared to using a normal function call. Please explain with full details.

Advantage : (_____)

Disadvantage : (_____)

6.(15 points) Fill out the empty boxes in the following code to write a program that takes two strings as input and prints out to the screen the longest common prefix (LCP) of the two strings. Assume that the size of a string is less than 100.

(Examples : the longest common prefix of "global" and "glossary" is "glo", of "department" and "depart" is "depart", and of "glove" and "dove" is the empty string "")

```
#include <stdio.h>
```

```
void getLCP(char* s1, char* s2, char* LCP)
```

```
{
  _____
}
```

```
int main()
```

```
{
  char s1[100], s2[100], LCP_str[100];
  scanf("%s %s", s1, s2);
  getLCP(s1, s2, LCP_str);
  printf("%s\n", LCP_str);
  return 0;
}
```

Input Example :
global glossary

Output Example (Execution Result) :
glo

7.(15 points) What is the execution result of the following C program? (What will be printed on the screen?)

(_____)

```
#include <stdio.h>
void f(int* a, int b)
{
  int k;
  for (k=3;k>=1;k--) {
    a[k]--;
    b=a[k];
  }
}
```

```
int main()
{
  int x[6]={1,2,3,4,5,6};
  int* y, z, i;
  y=x+2;
  z=*y-2;
  f(x, z);
  *y=*y+5;
  for (i=0;i<=5;i++) printf("%d ",x[i]);
  printf("%d %d\n",*y,z);
  return 0;
}
```