

CMPE112/CMSE112 Questions with solutions Part II

Q1)

What is printed by this program? Answer in the box:

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

```
double g(double u)
{
    return u < 0 ? u - 1 : u + 1;
}
```

```
void f(double *px)
{
    *px += g(*px);
}
```

```
void main()
{
    double y = 5.2;
    f(&y);
    printf("\n %4.1f" , y);
}
```

11.4

Q2)

What is printed by this program? Answer in the box:

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

```
main()
{
    int *ptr;
    int array[4] = {1, 2, 3, 4};
    for(ptr=array+3; ptr >= array; ptr--)
        printf("%d  ", *ptr);
}
```

4 3 2 1

Q3)

What is printed by this program? Answer in the box:

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

```
main()
{
    char *p = "ABC";
    printf("%c\n", *(p + *p - 'B' + 2));
}
```

B

Q4

What is printed by this program? *Answer in the box:*

```
#include <stdio.h>
void fun(int *p)
{
    int i;
    i = 1;
    while( i < 10)
    {
        *p = i;
        i *= 3;
        p++;
    }
}

main()
{
    int a[] = {8, 2, 9, 4, 6, 5, 7};
    int i;
    fun(a+2);
    for(i=0; i < 7; i += 2)
        printf("%d ", a[i]);
}
```

8 1 9 7

Q5

Fill in the blanks (denoted by ____) in the following program:

```
/* This program reads a value for x and, then, calls */
/* the function SetValue(). */
/* The function assigns the value 0 to x if x's entered value */
/* is less than 10; otherwise, it assigns the value */
/* 1 to x. */
```

```
#include <stdio.h>
main()
{
    void SetValue( __int *__ );
    int x;
    scanf("%d", &x);
    SetValue( __&x__ );
    printf("The new value of x is: %d", x);
}
```

```
void SetValue( __int *__ a)
{
    if ( __*a__ < 10) __*a__ = 0;
    else __*a__ = 1;
}
```

Q6

Write a program that reads name and surname of a person from the keyboard. Then, if the name is lexicographically greater than the surname, it prints the name first and then the surname on the monitor. Otherwise, it prints the surname first and then the name. Note that name and surname cannot be more than 30 characters each and they are assumed to be typed in lowercase characters.

```
#include <stdio.h>
#include <string.h>
int main(){
    char name[30], surname[30];
    printf("Enter Name and Surname \n");
    scanf("%s%s",name,surname);
    if (strcmp(name,surname)>0) printf("%s %s", name , surname);
    else printf("%s %s ",surname, name);

    return 0;}
```

Q7

(a) Fill in the blanks in the program given below which is used for sorting three numbers in ascending (increasing) order. For example, when prompted if the user enters

7.5 9.6 5.5

the program should print

The numbers in ascending order are: 5.50 7.50 9.60

Note: Lines that contain blanks are indicated by a ➤ in the left margin.

```
/*
 * A program for ordering three numbers
 */
#include <stdio.h>

1> void order( _double*__smp, __double*__lgp);

int main(void) {
    double num1, num2, num3; /* three numbers to put in order */

    /* Gets test data */
    printf("Enter three numbers separated by blanks> ");

    scanf("%lf%lf%lf", &num1, &num2, &num3);
    /* Orders the three numbers */
2> order(__&num1__, __&num2__);
3> order(__&num1__, __&num3__);
4> order(__&num2__, __&num3__);

    /* Displays results */
    printf("The numbers in ascending order are: %.2f %.2f %.2f\n",
        num1, num2, num3);

    return 0;
}

/*
 * Arranges arguments in ascending order
 */
5> void order(_double*__smp, _double*__lgp) {
    double temp;
    /* Compares values and swaps if necessary */
6> if (__*smp__ > __*lgp__) {
7>     __temp__ = __*smp__;
8>     __*smp__ = __*lgp__;
9>     __*lgp__ = __temp__;
    }
}
```

Q8

Consider the following C programs. What is printed? Provide the exact form of the output as it is specified by the **printf()** statement.

Output

```
#include <stdio.h>
void foo(int * );
main()
{
    int a [3]= { 1,2,3} ;
    foo(a);

    printf("%d\n" , a[0]);
    printf("%d\n" , a[1]);
    printf("%d\n" , a[2]);
}
```

```
void foo( int *b)
{
    ++ b;
    *b =9;

    ++ b;
    *b *=2;
}
```

1
9
6

Q11)

Trace and list the output of the program

#include<stdio.h>

```
void fsp(int *x,int y)
{
    if (*x>y) { *x+=y;
                y+=*x;
            }
    else { y-=*x;
           *x=*x*y;
        }
    printf("X Value=%d and Y=%d\n",*x,y);
}
```

```
int main()
{
    int a=3,b=5;
    fsp(&a,b);
    a+=b;
    b+=a;
    printf("Result of A=%d and B=%d",a,b);
    return 0;
```

TRACE

a	b	*x	y	*x>y
---	---	----	----	-----
3	5	3	5	false
			5-3=2	
			2	
		3*2=6		
		6		
6				
6+5=11				
	5+11=16			

OUTPUT

X Value =6 and Y=2
Result of A=11 and B=16

Q12

Trace and list the output of the program

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

```
void fp(int a , int *y , int m)
{int i;
 for(i=0;i<m/2;i++)
 {
  if (i==0) *y=a+1;
   else *(y+i)=--a;
  printf("I=%d and Y + %d = %d\n", i , i ,*(y+i));
 }
}
```

```
int main()
{
int array[3]={5,2,6};
int i,n=6;
fp(array[0],array,n);

for(i=0;i<n/2;i++)
printf(" %d \n",array[i]);
return 0;
}
```

TRACE

	array	n	a	m	i
y→	5--6	6	5	6	0
	2--4		4		1
	6--3		3		2
					3

OUTPUT

```
I=0 and Y+0=6
I=1 and Y+1=4
I=2 and Y+2=3
6
4
3
```

Q13)

The following function decides whether the (nxn) matrix is upper triangular or not by returning **1 if it is upper triangular and zero otherwise.**

(Note: a matrix is upper triangular if all elements below the diagonal are zero)

Example:

4	5	3	4
0	7	0	6
0	0	5	3
0	0	0	7

diagonal elements

Complete the missing part of the given function

```
int IsUpperTriangular(int matrix[m][m], int n)
{
    int i,j;
    for(i=1;i<n;i++){
        for(j=0;j<i;j++){
            if (matrix[i][j]!=0)
                return 0;
        }
    }
    return 1;
}
```

Q14

Using the following initializations in a program

```
int y[]={1,2,3,4,5};
int *x= y;
```

What are the values of the following expressions ?

		<u>Values</u>
a)	*x ;	1
b)	*(x -1) ;	cancelled
c)	*x++ ;	1
d)	--*x ;	0
e)	x - y ;	0

Q15

What are the values of the following expressions ?

```
int arr[]={1 , 2 , 3 , 4 , 5};
int *parr[3];
parr[0]=arr;
parr[1]=arr+4;
parr[2]=parr[0]+2;
```

		<u>Values</u>
a)	*(parr[0]+1);	2
b)	*(parr[1]-1);	4
c)	*(parr[2]+1);	4

Q16

Given the following initializations:

```
int scores[] = {88, 98, 25, 53, 70, 66};  
int *pscores = scores;
```

Write down the values of the following expressions:

- a) *pscores88.....
- b) *(pscores+2)25.....
- c) pscores – scores0.....
- d) (pscores[2] + 5)30.....
- e) --*pscores87.....

Q17

Given the following initializations

```
char word1[13] = "introduction";  
char word2[14] = "toprogramming";  
char str1[9] = "computer";  
char str2[12] = "engineering"
```

What will be the values of the following expressions ?

- a) printf("%d", strlen(word2));13.....
- b) printf("%s", strncat(word1, word2, 2));introductionto.....
- c) printf("%s", strncpy(word2, "algorithms", 9));algorithm.....
- d) printf("%d", strcmp(str1, str2));-1.....
- e) printf("%s", strcpy(str1, str2));engineer.....