ANKARA UNIVERSITY

Computer Engineering Department

COM 101B

FINAL EXAM

Instructor: Dr. Hacer Yalım Keleş

Date: 06/01/2014

Duration: 90 minutes.

Student ID:

Name & Surname:

Question #	Total Points	Student Grade	Question #	Total Points	Student Grade
1	1		12	3	
2	2		13	3	
3	1		14	2	
4	2		15	3	
5	3		16	3	
6	1		17	2	
7	2		18	3	
8	2		19	4	
9	2		20	3	
10	2		21	3	
11	3		**Grade (Over 50):**		

1	
	`int i=0;`
	`while(i<10)`
	`{`
	`  printf("%d\n",2*i++);`
	`  i+=2;`
	`}`
		Output:

2	
	`int a;`
	`for(a=1;a<20; )`
	`{`
	`  switch(a%5)`
	`  {`
	`  case 0:`
	`  case 1:`
	`  a+=6;`
	`  break;`
	`  case 2:`
	`  a+=2;`
	`  break;`
	`  case 3:`
	`  case 4:`
	`  a+=3;`
	`  break;`
	`  }`
	
	`  printf("%d ",a++);`
	`}`
	`printf("%d",a);`
		Output:

3	
	`void f(int i)`
	`{`
	`  i += 2;`
	`}`
	`int j=5;`
	`int main()`
	`{`
	`  f(j);`
	`  printf("%d",j);`
	
	`  return 0;`
	
	`}`
		Output:

4	
	`int i = 5;`
	`while(i-- >= 0)`
	`    printf("%d ", i);`
	`printf("\n");`
	
	`while(++i <= 0)`
	`    printf("%d ", i);`
		Output:

5	
	`int x=1, y=1;`
	`for(; y; printf("%d %d\n", x, y))`
	`{`
	`    y = x++ <= 5;`
	`}`
		Output:

6	
	`int x = 10, y = 100%90, i;`
	`for(i=1; i<10; i++)`
	`if(x != y);`
	`printf("x = %d y = %d\n", x, y);`
		Output:

7	Assume that integer size is 4 bytes.
	
	`int* p = 0x7C;`
	`p+=2;`
	`printf("0x%x",p);`
		Output:

8	
	`int i=3, *j;`
	`j = &i;`
	`(*j)++;`
	`i++`
	`printf("%d\n", i+*j);`
		Output:

9	
	`void fun(void *p)`
	`{`
	`  int* q = (int*)p;`
	`  *q += 2;`
	`}`
	`int i=5;`
	`int main()`
	`{`
	`  void *vptr;`
	`  vptr = &i;`
	`  fun(vptr);`
	`  printf("%d",i);`
	
	`  return 0;`
	
	`}`
		Output:

10	
	`int i, n;`
	`char *x="com101b";`
	`n = strlen(x);`
	`for(i=0; i<n; i++)`
	`{`
	`  printf("%s\n", x);`
	`  x++;`
	`}`
		Output:

11	ASCII 48 : character ‘0’
	ASCII 49 : character ‘1’
	..
	ASCII 57 : character ‘9’
	
	`char c=48;`
	`int i, mask=01;`
	
	`for(i=1; i<=5; i++)`
	`{`
	`  printf("%c", c|mask);`
	`  mask = mask<<1;`
	`}`
		Output:

12	ASCII 65 : character 'A'
	ASCII 66: character 'B'
	..
	ASCII 90: character 'Z'
	
	`int n=69;`
	`char str2[20];`
	`char *str;`
	`str = "%d\n";`
	`str++;`
	`str++;`
	
	`strcpy(str2,"%c");`
	`strcat(str2,str-2);`
	`printf(str2, n, n);`
		Output:

13	`int sumd(int n)`
	`{`
	`  int s, d;`
	`  if(n!=0)`
	`  {`
	`  d = n%10;`
	`  n = n/10;`
	`  s = d+sumd(n);`
	`  }`
	`  else`
	`  return 0;`
	`  return s;`
	`}`
	`int main()`
	`{`
	`  int a, b;`
	`  a = sumd(123);`
	`  b = sumd(205);`
	`  printf("%d, %d\n", a, b);`
	
	`  return 0;`
	`}`
		Output:

14

```
int i;
char s[] = "When you know better you do better.";
char t[100];
char *ps, *pt;
ps = s;
pt = t;
for(i=5;i<13;i++)
    *pt++ = *(ps+i);

*pt = '\0';
printf("%s\n", t);
```

Output:

15

```
int i=021, j=0x2A, k, l, m;

k=i|j;
l=i&j;
m=k^l;

printf("%d, %d, %d, %d, %d\n", i, j, k, l, m);
```

Output:

16

```
static int arr[] = {1, 5, -1, 7, 4};
int *p[] = {arr, arr+1, arr+2, arr+3, arr+4};
int **ptr=p;
ptr++;
printf("%d, %d, %d\n", *(*ptr+3), *(p[2])+3, *(*p+3));
```

Output:

17

```
int i=4, j=8, k=2;

printf("%d, %d, %d\n", i|j&k, i&j|k, i^j);
```

Output:

18

```
int *p, i, j;
p = (int*)malloc(12*sizeof(int));

for(i=0; i<3; i++)
    for(j=0; j<4; j++)
    {
        p[i*4+j] = i;
    }

for(j=0; j<4; j++)
{
    for(i=0; i<3; i++)
    {
        printf("%d ",p[i*4+j]);
    }
    printf("\n");
}
```

Output:

19

Write the required dynamic memory allocations into the boxes depicted below. Then write the output of this program to the Output box.

```
struct emp
{
    int len;
    char* name;
};
int main()
{
    char newname[] = "Ahmet";
    struct emp *p;
    [                                                    ]

    p->len = strlen(newname);
    [                                                    ]

    strcpy(p -> name, newname);
    printf("%d %s\n", p->len, p->name);

    return 0;
}
```

Output:

20

Write a function which computes the sum of the values of the characters in a character array and returns the sum.

int char_sum(char* chr);

ex:
char_sum("A") returns 65 → which is ASCII value of ('A')
char_sum("AB") returns 131 → which is ASCII value of ('A'+'B')

	Source Code:
21	Write a function which computes the **factorial** of a given number, and returns the computed value.
	Source Code: