KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
Information and Computer Science Department

2013 Summer Semester (Term 123)
ICS103 Computer Programming in C (2-3-3)
MIDTERM EXAM
JULY 7, 2013
120 MINUTES

Exam Code	001		
Student Name			
KFUPM ID			
Class Section	DR. SALAH ADAM	SECN 01	☐ UMTW 09:20 am
	DR. SALAH ADAM	SECN 03	☐ UMTW 10:30 am
	DR. FARAG EZZEDIN	SECN 02	☐ UMTW 09:20 am
	DR. FARAG EZZEDIN	SECN 04	☐ UMTW 10:30 am
	DR. FARAG EZZEDIN	SECN 05	☐ UMTW 01:10 pm

Note: All questions have the same weight (40 questions, 2.5 points each).

IMPORTANT NOTES

△ Fill-in your information on the answer sheet.
△ **Mark your answers on the answer sheet.**
△ **The answer sheet is the only one that will be graded.**
△ Do NOT start the exam until you are instructed to do so.
△ This is a closed material exam. So, remove any relevant material.
△ Calculators are NOT allowed. If you have one, put it on the floor.
△ Mobile phones are NOT allowed. If you have one, switch it off NOW.

1. Which of the following is **not** a reserved word in c:

i.	int	ii.	else	iii.	x
iv.	sqrt	v.	printf		

A. iii, iv, v

B. iii

C. iv, v

D. i, ii

2. What will be shown on the screen as a result of executing the following statements?

```
int x = 3;
if(x/2*2 == x)
      printf("A");
else if(x/2*2 == 2/2*x)
      printf("B");
else if(2/2*x == x)
      printf("C");
else
      printf("D");
```

A. A

B. B

C. C

D. D

3. Which one of the following C variable names is **not** valid?

A. _kfupm

B. kf!upm

C. K2fpm

D. All of the above are correct

4. What is the answer of the following expression?

```
2 < 3 || a == b && !c *3 < 4
```

A. 1

B. 0

C. I can't answer it until I know the values of a, b, c

D. None of the above

5. What will be shown on the screen as a result of executing the following statements?

```
double grd = 98;
if(grd > 80)
        printf("Excellent");
        printf("\n");
if(grd > 50)
        printf("Good");
else
        printf("Fail");
        printf("***");
```

A. Excellent

B. Excellent***

C. Excellent Good

D. Excellent

   Good***

6. Which of the following is the correct order of evaluation for the C operators in the expression shown below?

$$2 > 3 \ || \ a \ == \ b \ \&\& \ c \ *3 \ < \ 4$$

A. >, ||, ==, &&, *, <

B. *, >, ==, < , &&, ||

C. *, >, <, == , &&, ||

7. Which of the following is the correct order of evaluation for the C operators in the expression shown below?

$$a \ / \ b \ * \ (c \ + \ -d) \ \% \ e$$

A. -, +, /, *, %

B. /, *, %, -, +

C. -, +,%, /, *

D. None of the above

8. What will be shown on the screen as a result of executing the following statements?

```
double x = 3.5;
switch (x){
 case 2.5: printf("2");
           break;
 case 3.5: printf("3");
           x=20;
 case 4.5: printf("4");
           break;
           x=30;
default: printf("5"); x=40;}
printf("x=%5.2f", x);
```

A. 34x=20.00

B. 34x=30.00

C. 3x=40.00

D. Syntax error

9. Given the following declarations:

```
double a = 4.3265 ; int b = 72;
```

Which print statement produces the following output? (A square represents one space)

	4	.	3	3			7	2

A. printf("%7.2f%2d", a, b);

B. printf("%4.2f%4d", a, b);

C. printf("%5.2f%4d", a, b);

D. printf("%5.2f%2d", a, b);

10. What will be shown on the screen as a result of executing the following statements?

```
int fail = 0;
if (!fail || fail)
printf("D");
if (!fail )
printf("C");
else
printf("B");
printf("A");
```

A. DCA

B. DBA

C. BA

D. CBA

11. Consider the following logical expression:

```
A || C + D && !E
```

Which of the following is equivalent to the above logical expression?

A. ((A || (C + D)) && !E)

B. (A || C) + (D && !E)

C. (A || ((C + D) && !E))

D. ((A || (C + D)) || E)

12. Which of the following C expressions is equivalent to the following mathematical expression:

$$\frac{ab + c}{de}$$

A. a * b + c / d * e

B. (a * b + c) / d / e

C. (a * b + c) / d * e

D. (a * b + c / (d * e))

13. What will be shown on the screen as a result of executing the following statements?

```
int A = 0, B = 1;
if (A)
    printf("A");
if (B)
  printf("B");
if ( A = B)
    printf("A=B");
else
    printf("A!=B");
```

A. ABA!=B

B. ABA=B

C. BA!=B

D. BA=B

14. What will be shown on the screen as a result of executing the following statements?

```
int a = 10, b = 5;
if (a == b)
  b += 5;
  a = a + 5;
printf("%d  %d",a,b);
```

A. 10   5

B. 10   10

C. 15   5

D. 15   10

15. What will be shown on the screen as a result of executing the following statements?

```
int i,j, cout = 0, cin=0;
for(j=10; j>5; j--) {
   cout++;
   for(i=1; i<=10; i++)
     cin++;
}
printf("%d %d", cout, cin);
```

A. 5   10

B. 5   50

C. 5   15

D. 6   60

16. To test if a given variable ***ch*** of type *char* contains a letter (lower case or capital), we use the condition:

A. ch >= 'a' && ch <= 'z' && ch >= 'A' && ch <= 'Z'

B. 'a' <= ch <= 'z' && 'A' <= ch <= 'Z'

C. ch >= 'a' && ch <= 'z' || ch >= 'A' && ch <= 'Z'

D. 'a' <= ch <= 'z' || 'A' <= ch <= 'Z'

17. What is the value of the following C expression?

$$1/2 < 1 < 3/2$$

A. 1

B. 0

C. Undefined

D. Error: Invalid C logical expression

18. What is the output of the following C program fragment?

```
int m = 4, n = 3;
int k = m--  +  ++n;
printf("%d   %d   %d",   m,  n,  k);
```

A. 3   4   8

B. 3   4   7

C. 4   3   7

D. 3   3   6

19. Select the correct answer which will enable the code below to print the even numbers from 2 to 20 inclusive (i.e., 2, 4, 6, … 20):

```
int k;
for(_____)
    printf("%d ",2 * k);
```

A. k = 2; k <= 20; k += 2

B. k = 1; k <= 20; k + 2

C. k = 1; k <= 10; k + 1

D. k = 1; k <= 10; k++

20. Consider the following C program fragment:

```
printf("%d", SPEED);
```

Which statement defines the **constant** SPEED with a value of 120?

A. int SPEED = 120;

B. #define SPEED = 120;

C. #define SPEED 120

D. SPEED = 120

21. Consider the following C program fragment:

```
int x;
scanf("%d", &x);
do{
    printf("%d", x );
    x++;
}while(x < 10);
```

Which of the following is equivalent to the above C program fragment?

A. `int x;`
   `scanf("%d", &x);`
   `printf("%d", x);`
   `x++;`
   `while(x < 10){`
    `printf("%d", x);`
    `x++;     }`
	B. `int x;`
	   `scanf("%d", &x);`
	   `while(x < 10){`
	    `printf("%d", x);`
	    `x++;`
	   `}`

C. `int x;`
   `scanf("%d", &x);`
   `x++;`
   `while(x < 10){`
    `printf("%d", x);`
    `x++;     }`
	D. `int x;`
	   `for(scanf("%d",&x);x<10; x++)`
	    `printf(" %d ", x);`

22. What is the output of the following C statement?

```
printf("%d  %d",  5 / 2, 3 % 5);
```

A. 2.5   5

B. 2.5   3

C. 2   0

D. 2   3

23. Consider the following C code fragment:

```
int k;
for(_____)
    printf("%d ", k*k + 2);
```

Which for-loop parameters will cause the above code fragment to output:

   38   27   18   11   6   3   2

A. `k = 6; k > 0; k = k - 1`

B. `k = 6; k >= 0 ; k = k-2`

C. `k = 6; k >= 0; k -= 1`

D. `k = 38; k >= 2; k = k-11`

24. What is the output of the following C program fragment?

```
int k = 4;
do{
    k += 3;
    printf("%d  ", k);
    k++;
}while(k <= 12);
printf("%d  ", k);
```

A. 7   11   13   14

B. 7   11   15   16

C. 7   11   12

D. 7   11   16

25. What is the correct condition that will make the code below print the value of the variable **m** only if it is an even number?

```
if (_____)
    printf("%d ",m);
```

A. m % 2 == 1

B. m / 2 * 2 != m

C. (int) m / 2.0 != m / 2

D. m * m % 4 == 0

26. What will be shown on the screen as a result of executing the following statements?

```
int k, m, sum = 0;
for(k = 0; k <= 4; k++)
   for(m = 3; m > 0; m--)
      sum = sum + m;
printf("%d", sum);
```

A. 10

B. 20

C. 30

D. 60

27. What will be shown on the screen as a result of executing the following statements?

```
int v = 30, k = 4;
double newVal, modifier = 1.0;
newVal = v + modifier * v/k;
printf("%.2f", newVal);
```

A. 37

B. 37.00

C. 37.50

D. 38.00

28. What is the proper code that checks if a file assigned to a file pointer infile was opened correctly?

```
A. if (NULL)
     printf("File not found");
B. if (infile = NULL)
     printf("File not found");
C. if (infile == EOF)
     printf("File not found");
D. if (infile == NULL)
     printf("File not found");
```

29. What will be shown on the screen as a result of executing the following statements?

```
int i = 10;
while(++i < 12)
   printf("%d  ", i);
```

A. 10   11

B. 11   12

C. 11

D. 12

The next 3 questions (30, 31and 32) are based on the following code fragment:

```
#include <stdio.h>
int main()
{  char x;
   FILE *infile;
            Blank1
   while(          Blank2          )
   { printf("%c ",x); }
            Blank3
   return 0;
}
```

The program above is supposed to read a set of characters stored in a text file named
"*mydata.txt*" and print them to the screen.

30. The proper statement replacing **Blank1** is:

A. fopen(mydata.txt, "r");

B. infile = fopen("mydata.txt");

C. infile = fopen("mydata.txt", "r");

D. infile = openfile("mydata.txt","r");

31. The proper statement replacing **Blank2** is:

A. fscanf("%c", &x) != EOF

B. scanf(infile, "%c", &x) != EOF

C. fscanf(infile, "%c", &x) != NULL

D. fscanf(infile, "%c", &x) != EOF

32. The proper statement replacing **Blank3** is:

A. fileclose("mydata.txt");

B. fclose("mydata.txt");

C. fileclose(infile);

D. fclose(infile);

33. What will be shown on the screen as a result of executing the following statements?

```
int i,j,k;
for(i=7; i > 4; i--)
    printf("%d ", i);
    for(j=1; j < i; j+=2)
        printf("%d ", j);
        printf("\n");
```

A. `7 6 5 1 3`   7 1 3 5   7 6 5 1   7 1 3 5 6 1 3 5 5 1 3
                   6 1 3 5   3
                   5 1 3

34. In the C code fragment below, how many times is the string "Hello There" printed?

```
int x;
for(x = 1; x <= 15; x++){
  if(x % 15 == 0)
      break;
  else if ( x < 10 )
      continue;
  else
      printf("Hello There\n");
}
```

A. 4 times

B. 0 times

C. 5 times

D. 9 times

35. What will be shown on the screen as a result of executing the following statements (assume a single space is represented by a single #)?

```
int x = 1000; double y = 2.0;
printf("%8.2f%10.2f\n", x+y, y-x);
```

A. #1000.00+#####2.0#1000.00-#####2.0

B. #1002.00###-998.00

C. ###1002.00#####-998.00

D. 1002.00,-998.00

36. What is the result of the following function call?

```
        sqrt(4);
```

A. 2

B. 2.0

C. 16.0

D. 16

37. What will be shown on the screen as a result of executing the following statements?

```
int i = 10, sum = 0;
while(i > 0){
   sum += i;
   i -= 2;
}
printf("i=%d, sum=%d\n",i,sum);
```

A. 0,30

B. i=10, sum=20

C. i = 10, sum =30;

D. i=0, sum=30

38. What will be shown on the screen as a result of executing the following statements?

```
double m;
m = !4 * 14 / 4 || 2.0;
printf("%.2f\n",m);
```

A. 0.00

B. 1.00

C. 2.00

D. 5.00

39. What will be shown on the screen as a result of executing the following statements?

```
int k = 3, m = 4,count = 0;
for(k = 0; k == 4; k+=2)
    for(m = 5; m > 0; m=m-2)
        count+=1;
printf("k = %d, m = %d\n", k, m);
```

A. k = 3, m = 4

B. k = 0, m = 4

C. k = 6, m = 1

D. k = 0, m = -1

40. Given the block of code below

```
switch(day_no)
{
    case 6: printf("Special day\n");
    case 7: printf("Vacation day\n");
      break;
    default: printf("Normal working day\n");
}
```

Which of the following *if*-statements represents a correct conversion of the code above?

A. if (day_no==6 || day_no==7) {
       printf("Special day\n");
       printf("Vacation day\n");
   }
    else
       printf("Normal working day\n");

B. if (day_no==6) {
       printf("Special day\n");
       printf("Vacation day\n");
   }
   else if (day_no==7)
       printf("Vacation day\n");
   else
       printf("Normal working day\n");

C. if (day_no==6)
       printf("Special day\n");
   else if (day_no==7)
       printf("Vacation day\n");
   else
       printf("Normal working day\n");

D. if (day_no=6 || day_no =7) {
       printf("Special day\n");
       printf("Vacation day\n");
   }
    else
       printf("Normal working day\n");