

King Fahd University of Petroleum and Minerals
Information and Computer Science Department
ICS 103: Computer Programming in C
Spring Semester 2007-2008 (Term-072)
Major Exam-I

Time:100 minutes

Saturday, March 22, 2008

Name:

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ID#:

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PLEASE CIRCLE YOUR SECTION BELOW:

Section	01	02	03	04	05	06
Time	SM-8-9	SM 9-10	SM 11-12	UT 10-11	UT 11:12	UT 10-11

Note:

- **Copying or Discussion will result in zero grade for all the students involved.**
- **Attempt all questions.**

Question #	Maximum Marks	Obtained Marks
1	16x1.5=24	
2	6	
3	6	
4	6	
5	10	
6	8	
7	6	
8	16	
9	18	
Total	100	

Question 1: (24 points 1.5 each expression)

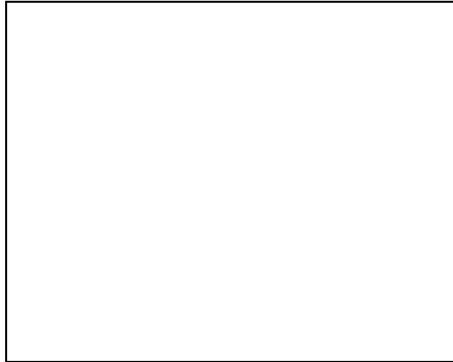
Find the values of the following expressions.

expression	Value
$5 > 6 - 2$	
$1 != 1 <= 1$	
$10 <= 7 <= 5$	
$7 < 10 <= 10 - 5$	
$1 !1 \&\& 0$	
$6 != 3 != 1$	
$-8 < -4 < 0$	
$(\text{double})(9/2)$	
$3 * 4 - 6 / 2.0$	
$-4 + 4 * 3 \% 5$	
$3 \% 5 * 5$	
$21 / 6 * 6.0$	
$11 + 1 / 2.0$	
$10 / (\text{int}) 2.5$	
$3 - 2 1 == 2 \% 3$	
$!3 < 3 + 1 \&\& 0 < 2 - 2$	

Question 2 (6 points)

What is the output of the following program

```
#include <stdio.h>
int main(void) {
int x,y,z;
x=20;z=30;
if(0<=x<=10)
    printf("in\n");
else
    printf("out\n");
if( x=10)
    z=40;
else
    z=10;
printf("%d,%d",x,z);
return 0;
}
```



Question 3 (6 points)

Find the equivalent expression on each side

expression	Equivalent expression without brackets
<code>!(!a !b)</code>	
<code>!(a>d && !(a>c))</code>	
<code>!()</code>	<code>a==b c > d</code>

Question 4 (6 points)

What will be the values of x, y, and z after executing the following statements.

```
int x=-9.666;  
double y=x;  
double z=x/3;
```

x	y	z
<input type="text"/>	<input type="text"/>	<input type="text"/>

Question 5 (10 points)

What is the output of the following program

```
#include <stdio.h>  
int main() {  
int x;  
printf("Enter a value for x >");  
scanf("%d",&x);  
if(x > 5 ) {  
if(x< 10){  
if(x>=8)  
printf("A");  
else  
printf("B");  
}  
else{  
if ( x >= 0)  
printf("C");  
else  
printf("D");  
}  
}  
else  
printf("E");  
return 0;  
}
```

Value of x typed By user	Program output
3	
7	
9	
10	
-2	

Question 6 (8 points)

```
#include <stdio.h>
int main() {
int x;
printf("Enter a value for x >");
scanf("%d", &x);
switch(x) {
case 6: x=x+2;
case 5: x=x-1;
if(x==4)
break;
case 3: x=x-2;

break;
case 2: x=x-1;
default : x=10;
}
printf("%d\n",x);
return 0;}
```

Value of x typed By user	Program output
6	
5	
3	
2	

Question 7 (6 points)

Given the following program. Write 2 printf statements to have the output shown below the program. Each square represents one space.

```
#include <stdio.h>
int main(void) {
double z= 623.782;
int i=917;

-----

-----

return 0;
}
```

	9	1	7			6	2	3	.	8					
		6	2	3	.	7	8	2	0				9	1	7

Question 8 (16 points)

Write a program that converts a distance from miles to kilometers or from kilometers to miles. Your program should give two options to the user.

If the user types 1, then the program will ask for a distance in miles and converts it to kilometers.

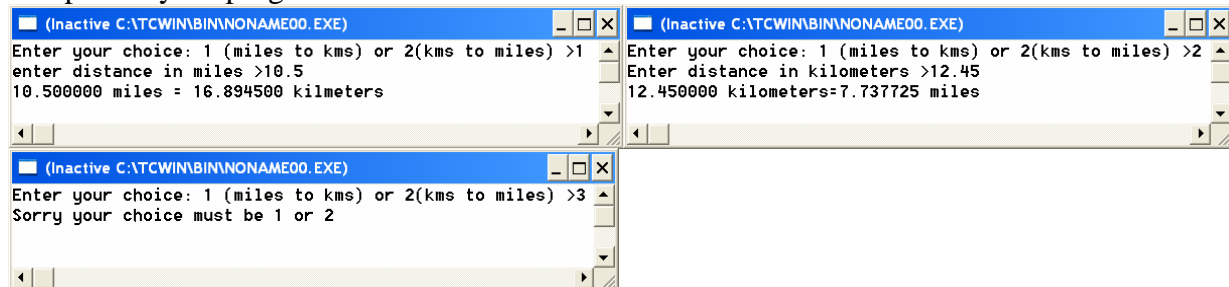
If the user types 2, then the program will ask for a distance in kilometers and converts it to miles.

If the user types another number, the program will display an error message.

1 mile=1.609 kms. The conversion factor from mile to kilometer needs to be declared as a constant.

Use switch statement.

Samples of your program runs are shown below:



Question 9 (18 points)

Write a program that asks the user for a code character and a radius. The code character can be:

A or a to compute and display the area of the circle

C or c to compute and display the circumference of the circle

D or d to compute and display the diameter of the circle

$$area = \pi r^2$$

$$circumference = 2\pi r$$

$$diameter = 2r$$

Use if-else-if statement

