King Saud University

College of Computer and Information Sciences
Computer Science Department

	Course Code:	**CSC 215**
	Course Title:	**Procedural Programming**
	Semester:	**Fall 2016 (Semester 1 of 2016-2017)**
	Midterm Exam	
	Duration: 60 minutes	
Student Name:		
Student ID:		
Student Section No.		

	Computer Science B.Sc. Program: NCAAA: Intended Learning Outcomes (ILO) Student Outcomes ABET: Program Learning Outcomes (PLO) Student outcomes	**Question No. Relevant Is Hyperlinked**	**Covering %**
NCAAA	**1. Knowledge (NCAAA)** Suggested verbs (list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write)	Exercises: Q1: 1 through 6 Q2: 7	
ABET	(i) Use current techniques, skills, and tools necessary for computing practices; *The students learn how to use Integrated Development Environment to compile and run C programs. Students also learn the differences between procedural and object oriented languages*	Exercises: Q1: 1 through 6 Q2: 7	
NCAAA	**2. Cognitive Skills (NCAAA)** Suggested verbs (estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise)	Exercises: Q2 , Q3 , Q4 Q5 and Q6	
ABET	b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution; *Students learn how to read and analyze a problem, determine its input and output, and allocated the required storage statically or dynamically.*	Exercise: Q6: A, B and E	
	c. An ability to design, implement and evaluate a computer-based system, process, component or program to meet desired goals. *Students learn how to analyze a procedural c program, evaluate c expressions and interpret algorithmic steps from natural language into c programs.*	Exercises: Q2 , Q3 , Q4 Q5 and Q6	

Question1: Write True/ False **(Total 7 points)**

Statement		True or False
1	`Function1 (double z) {…}` In the above function definition, Function1 returns int.	**True** [1]
2	All pointers are of the same size.	**True** [1]
3	When declaring a function, the variables names must match the variables names listed in the prototype declaration of that function.	**False** [1]
4	A static variable is initialized only the first time the block is entered.	**True** [1]
5	The following statement increments the value of the variable that p points to by 1 `*p ++;`	**False** [1]
6	The purpose of a Makefile is to tell the compiler how to build a C program.	**True** [1]

7	Given that x is a variable of type int and arr is an array of integers of size 10; The below two statements are equivalent:
	`x = arr[i];`
	`x = (arr+i);`
		False [1]

Question 2: Select the correct answer **(Total 7 points)**

1. What is the correct value to return to the operating system upon the successful completion of a program?

   A. -1
   B. 1
   C. 0 [1]
   D. Programs do not return a value.

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2. Which of the following is true?

   A. 1
   B. 66
   C. -1
   D. All of the above [1]

3. Evaluate `! (1 && ! (0 || 1))`.

A. 1 [1]
B. 0
C. Unevaluable

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4. What is the final value of x when the code
`int x; for(x=0; x<20 ; x++) { }` is run?

A. 20 [1]
B. 19
C. 0
D. 21

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5. How many times is a while loop guaranteed to loop?

A. 0 [1]
B. Infinitely
C. 1
D. Variable

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6. Which of the following gives the memory address of the first element in array arr, an array with 100 elements?

A. `arr[0]`
B. `arr` [1]
C. `&arr`
D. `arr[1]`

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7. Which of the following cannot be checked in a switch case statement ?

A. `int`
B. `enum`
C. `char`
D. `float` [1]

Question 3: Answer the following questions based on the given code: **(Total 6 points)**

A.
```
#include <stdio.h>
int main() {
int x;
for(x=-1; x<=10; x++)
{
if(x < 5)
continue;
else
{ printf("Welcome");
break;
}
}
return 0;
}
```

1. How many times "Welcome" will be printed?

   ……1 [2]……. Time/s

2. How many times the loop will be iterated?

   ……7 [2]……. Time/s

B.
```
#include <stdio.h>
void num(){
static int i = 4;
printf("%d ", i);
if(--i)
num();
}
main()
{
num();
return 0;
}
```

3. Write the output of the above C Program :

   …4…3…2…1 [2]……

   ……

Question 4: Determine the values of variables x and y after the following calculations are performed. Assume that x and y each have the value 3 when the statement begins executing. **(Total 2 points)**

```
x *= y++;
y /=2;
```

x = …**9** [1]…… y = …**2** [1]……

Question 5: Write a statement to answer the following question: **(Total 2 points)**

Assume there is an integer variable (x). Assume there is a pointer (ptr) of type int that points to the variable (x).

Write one statement that prints the address of (x) (in hexadecimal) two times. Once using the variable(x) and the other time using ptr.

…**printf("%p\t%p", &x, ptr);** [2]……

Question 6: For each of the following, write a statement that performs the indicated task. **(Total 6 points)**

A. Define a symbolic constant SIZE that has a value 5 using const keyword.

…..**const int SIZE = 5;** [1]……

B. Define an array named *numbers* with SIZE elements of type float.

…..**float numbers[SIZE];** [1]……

C. Assign the value 3.44 to the second element in the array.

……**numbers[1] = 3.44;** [1]……

D. Print the second array element with 1 digit of precision to the right of the decimal □point.

……**printf("%.1f", numbers[1]);** [1]……

E. Declare a String named *str* and initialize it to **Summer**.

……**char str[7] = "Summer";** [1]……or……**char* str = "Summer";**……

F. Write the function prototype for a function called Mid that takes a String as parameter and returns a pointer to the middle character in the String.

……**char* Mid(char*);** [1]……or……**char* Mid(char[]);**……