A. Y. 2022 – 2023

FIRST AND SECOND SEMESTER

PRACTICE FINAL EXAM

CIS 1101 – Programming 1

(Part 1)

Name:
Program and Year:
CIS 1101 Group #:
Date:

NOTES:

I. You have **90 minutes** to take the test. Kindly inspect the exam time duration carefully and do not spend too much time on a single question.

II. Each test has different directions. Follow them carefully.

III. Answer each item by typing your answers in the fields and spaces provided.

IV. Always try to write accurately using appropriate and efficient program logic and proper coding syntax. For programming problems, follow the coding conventional rules that are set for the class (e.g. all conditional statements must involve relational operators; break and continue statements shall be only used in switch blocks.).

V. Usage of compilers, calculators, and/or related applications is **STRICTLY NOT ALLOWED**.

VI. Should you have a concern on any of the questions, kindly contact or message the examiner for inspection or clarification.

VII. Answer each question as far as you can. Try not to leave blanks.

VIII. Once you are finished with the exam, save the PDF file with your answers and submit it as an attachment to the examiner's email address (20100215@usc.edu.ph) or through direct message for checking.

I. MULTIPLE CHOICE

DIRECTIONS: Choose the letter of the correct of best answer. Each item is worth 2 points.

..... 1. C is a _____ programing language.
[A] High level [B] General Purpose [C] Systems [D] A and B are correct [E] A, B, and C are correct

..... 2. In what year is C developed?
[A] 1970 [B] 1971 [C] 1972 [D] 1975 [E] None of the choices

..... 3. If the body of the for-loop is executed N times, then the condition is executed how many times?
[A] N+1 [B] N [C] N-1 [D] 0 [E] None of the choices

..... 4. Comments in C start with:
[A] ; [B] /* or // [C] // [D] /* [E] None of the choices

..... 5. What type of statement places statements in textual sequence so that they are executed in order of appearance?
[A] Iteration [B] Composition [C] Alternation [D] Loop [E] None of the choices

..... 6. What is the value of x that will cause the condition to short circuit? (x < -3 || x == 5)
[A] 5 [B] -4 [C] -2 [D] -3 [E] None of the choices

..... 7. Which of the following is a valid function call?
[A] void func() [B] func(); [C] void func(void); [D] func(int x); [E] None of the choices

..... 8. Which of the following is true about the following line of code:

```
for ( ; 1 ; x--) {}
```

[A] The loop will not execute at all. [B] The compiler will produce an error during compilation.
[C] The loop will never stop. [D] The loop will terminate when x is equal to 1.
[E] A runtime error will occur at that line. [F] None of the choices

..... 9. Which of the following is not a keyword in C?
[A] main [B] signed [C] short [D] enum [E] None of the choices

..... 10. The function scanf() is part of which library?
[A] conio.h [B] stdio.h [C] stdlib.h [D] Both A and B [E] None of the choices

..... 11. Variables accessible to all functions in the program have a ___ scope.
[A] global [B] program [C] local [D] main [E] None of the choices

..... 12. Which statements below creates a constant?
[A] #define int SPEED = 3500; [B] #define speed 3500 [C] constant int SPEED = 3500;
[D] int SPEED = 3500; [E] Both B and C [F] None of the choices

..... 13. Which of the following is not allowed in C given the declaration:

```
int A[10];
```

[A] scanf("%d", A + 1); [B] *(A + 1) = 10; [C] *A = 10; [D] A++; [E] None of the choices

..... 14. If the following variable has a global scope, what is its value?

```
int GASOLINE_MAHAL_KAAYO_AMBOT_NA_LANG;
```

[A] 80 [B] 1 [C] 0 [D] Garbage value [E] None of the choices

- ..... 15. Refer to the declaration below. Which of the following is true?

```
int A[5];
A = {1,2,3,4,5};
```

[A] Runtime error due to the first line. [B] Compiler error due to the second line.
[C] Compiler error due to the first line. [D] Runtime error due to the second line.
[E] No compiler or runtime error occurred.

- ..... 16. How many of the following numeric literals are invalid?

0X1F 1,200.75 2.34e2 0765

[A] None [B] 1 [C] 2 [D] 3 [E] 4

- ..... 17. ___ is used to access any element stored in the array.

[A] Identifier [B] Element [C] Index [D] Size [E] None of the choices

- ..... 18. A program error that occurs while the program is executing is:

[A] Compile time error [B] Runtime error [C] Syntax error [D] Both A and B [E] None of the choices

- ..... 19. Analyze the following statements:

I. The appropriate function prototype given the call **showStatus(2.9)** is **void showStatus(void)**.
II. In Dev-C++ IDE, **sizeof(void*) == sizeof(int**).**

Select the correct answer.

[A] Only statement I is true. [B] Only statement II is true.
[C] Both statements I and II are true. [D] Both statements I and II are false.

- ..... 20. Which of the following operators has the highest precedence?

[A] ++ [B] & [C] + [D] && [E] +=

- ..... 21. How many of the following operators have associativity of left to right?

! % && += == = & (address of)

[A] 1 [B] 2 [C] 3 [D] 4 [E] 5 or more

- ..... 22. Which of the following combination ASCII values (decimal) and character equivalent is incorrect?

[A] 48 -> '0' [B] 65 -> 'A' [C] 97 -> 'a' [D] 32 -> [space] [E] None of the choices

- ..... 23. Let A = 35, B = 10, C = 5, and D = 10. Which of the following will evaluate TRUE or 1?

[A] !(A > 0) || C > D [B] B % C >= D % C [C] A / C < A % D [D] B < A && (C > D || D > A)

- ..... 24. Which of the following is TRUE for stdio.h?

[A] It stands for standard input/output heading.
[B] It contains information pertaining to input and output.
[C] This has to be initialized or placed after the main function of the program.
[D] It is a file supported as part of the C preprocessor package.
[E] None of the choices

- ..... 25. Which of the following statements is incorrect in C programming?

[A] A C program always begins execution with the function called main().
[B] The compiler uses declaration statements to arrange suitable storage space in memory for the variables.
[C] The semicolon (;) at the end of the line identifies the line as a separator of the C statement.
[D] &X in the scan line tells the compiler to store the inputted value to the given address which is X.
[E] None of the choices

II. STRUCTURED RESPONSE

DIRECTIONS: Read carefully and answer the questions correctly. To gain full marks to questions you should express your ideas sensibly and answer with the proper syntax.

1. Identify what is asked. Write your answer on the blanks provided.

   (a) Preprocessor command starts with a …….

   (b) Ternary or conditional operator in C: …….

   (c) Dereference or indirection operator in C: …….

   (d) Cast operator symbol in C: …….

   (e) Number of bytes allocated to a character pointer variable in Dev-C++ IDE: …….

   (f) Header file or library that includes the malloc() function: …….

   (g) If N is the size of the array, what is the last index of the array? …….

   (h) Variables declared in the main() function have a …… scope.

   (i) An iteration statement in C that executes its body at least once: …….

   (j) Who developed C? Write the family name only. ……. **[10]**

2. Given the declaration: **int *x, z;**

   (a) Write the C statement that will let x point to variable z. ……

   (b) After (a), and using x, write the C statement that will

      (i) input from the keyboard the value of z. ……

      (ii) display the value of z. ……

   (c) If the statement in (a) was omitted, what happens when the program encounters the line **`printf("%d",*x)`**?

[8]

3. Given the declarations: **int *y;**
   int A[5] = {10, 20, 30, 40, 50};

   (a) Write the C statement that would let y hold the address of the 3rd component of A. ……

   (b) After (a), what is the value of y[1]? ……

   (c) After (a), and with the statement ***y = 100;** the value of A[num] is changed to 100.
   What is the value of num? ……

   (d) What happens when the program encounters the line **`scanf("%d",A+10)`** **?**

[8]

4. Compare and contrast the following functions: **malloc()** and **calloc().**

[3]

5. Consider the function header and some declared variables:

void func(int *A, int B)

int x = 10, *p = &x;

Determine whether each function call is valid or not. Write **YES or NO.**

(a) **func(&x,10);**		(b) **func(&10,20);**	
(c) **func(p,x);**		(d) **func(&x,getNum());** /*Assumption: getNum() returns an integer*/	
(e) **func(*p,x);**		(f) **func(p,*p);**	

[6]

6. Refer to the following programs:

PROGRAM A

```
#include<stdio.h>
int f(int *p, int *q)
{
  p = q;
  *p = 2;
  return *q;
}
int main()
{
  int i = 0, j = 1, k;
  k = f(&i, &j);
  if (j == k)
     printf("%d", k);
  return 0;
}
```

PROGRAM B

```
#include<stdio.h>
void mystery(int *ptra, int *ptrb)
{
   int *temp;
   temp = ptrb;
   ptrb = ptra;
   ptra = temp;
}
void main()
{
    int a=2016, b=0, c=4, d=42;
    mystery(&a, &b);
    if (a < c)
       mystery(&c, &a);
    mystery(&a, &d);
    printf("%d", a);
}
```

In PROGRAM A:

(a) What is the value of i after execution of function f() ?

(b) What is the value of j after execution of function f() ?

(c) How many values are printed?

[6]

In PROGRAM B:

(d) What is the output?

[3]

7. Discuss why it is not possible to return a local array from a calling function.

[3]

8. Given the recursive function and a function call, answer the following questions below:

```
int recur(int num) {
num = num % 4;
switch(num){
   case 1: return recur(num / 4); break;
   case 2: return recur(num + 4); break;
   case 3: return recur(num * 4); break;
   default: return num - 4 ;
}
```

```
/*Function call*/

int num = 11;
int x = recur(num);
```

(a) Determine the value of x.

(b) How many times is the function recur() executed?

(c) Find a value for num between 0 to 9 that will make the function recur execute infinitely. **[6]**

9. Given the code fragment on the right:

```
int arr[5] = {1,3,0,4,2};
int *ptr = arr;
int x = arr[arr[2] * arr[0] + arr[3]];
printf("%d and %d", x, *ptr + 5);
```

Determine the output: .....

[4]

10. Provide the values of **all indices** in the following arrays:

```
#include <stdio.h>

int A[5];              // A contains {                          }
int B[5] = {1,2,3};    // B contains {                          }
void main(){
   int C[5];           // C contains {                          }
   int D[5] = {1,2,3}; // D contains {                          }
}
```

[5]

11. Function Specification: Given an array of float values and the size of the array, the function will return the number of values less than or equal to 2.0.

```
/*Function prototype*/
    int count(float grade[], int gradeCount);
/*Function call*/
   float B[10] = {1.0, 2.0, 3.0, 5.0, 1.1, 2.2, 2.5};
   int ctr = sizeof(B)/sizeof(B[0]);
   int num = count(B, ctr);
```

(a) In function count(), what is the value of **sizeof(grade)** ? .....

(b) In function count(), what is the value of **gradeCount** ? .....

(c) What is the value of num ? .....

(d) If function count has a statement: ***grade = *grade + 0.5;**

Is a component of array B modified? If the answer is YES, write on the blank the value of the modified component, If the answer is NO, write on the blank NO. .....

[8]

12. Function **isSet()** accepts an array of integers named A and its size as parameters. It will return one (1) if the given array of integers is a set; or zero (0) if it is not a set. For each element of the set E, succeeding elements are compared to E to determine if E is unique.

Note: A collection is identified as a set if all of its elements are UNIQUE.

Fill in the blanks below to complete the code.

```
int isSet(int A[], int size) {
   int x, y;
   int isUnique = 1;
   for (              ;             && isUnique == 1; x++) {
        for (            ; y < size &&             ; y++) {}
        if (              ) {
            isUnique = 0;
        }
   }
   return isUnique;
}
```

[10]

"If you're always trying to be **normal**, you will **never know** how **amazing** you can be."
- Maya Angelou -

=== THE END ===

God bless you!

REVIEW YOUR ANSWERS!

Prepared by:
Wayne Dayata