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أجب عن جميع الأسئلة

Question No	1	2	3	4	5	Total
Mark						\ 100

Note: Please check that your exam is complete. It should have 4 printed pages in total.

Question One: (10 Marks)

Put a circle round the letter of the best answer.

- Because of variable scope
 - Variables created in a function can be used in another function
 - Variables created in a function can only be used in the main function
 - Variables created in a function cannot be used in another function.
 - None of the Above
- When the pointer is point to a variable, the indirection operator * indicates that the
 - declare a pointer
 - address of variable can be accessed
 - value at that address stored can be accessed
 - None of the Above
- Consider the following function definition

```
int operation (int A[], int n) {  
    ...  
}
```

Which is the appropriate (ملائم) calling statement from main program?
 - s=operation(A[], 6);
 - operation(A, 6);
 - k=operation(A, 6);
 - d=operation(int A, 6);
- Which of the following causes an error when try to opening file?
 - Failure to allocate memory to the file stream.
 - Inability to write data in a file because the disk is full.
 - Trying to read a file that doesn't exist.
 - All of the mentioned are true.
- p ->name can be written _____
 - p.name
 - p.(* name)
 - (*p).name
 - None of the Above
- Unless otherwise specified, individual array elements are passed _____ and entire arrays are passed _____.
 - by-reference, by-value
 - by-value, by-value
 - by-value, by-reference
 - by-reference, by-reference

7. What is the output of the following code segment?

```
void fn() {
    int a = 10;
    static int b = 20;
    printf("a = %d b = %d ", ++a, ++b); }
void main() {
    fn();
    fn(); }
```

- A. a = 11 b = 21 a = 11 b = 21
- B. a = 11 b = 21 a = 12 b = 21
- C. a = 11 b = 21 a = 11 b = 22
- D. a = 11 b = 21 a = 12 b = 22

8. Which of the following statements would read a single character from the file with file pointer fp and place the result in a character variable 'ch' defined as: char ch;

- A. fp = fgetc(ch);
- B. fscanf(fp , "%c" , &ch);
- C. fputc(ch , fp);
- D. Both A and B are true

9. Which is the special conversion specifier for printing addresses?

- A. %x
- B. %a
- C. %p
- D. %s

10. Which function is used to determine if a File Position Indicator reaches the file end?

- A. fscanf()
- B. fwrite ()
- C. feof ()
- D. fclose ()

Question Two: (10 Marks)

State whether the following are True (T) or False (F) .

1. Any block may contain variable declarations. When blocks are nested, and a variable in an outer block has the same name as a variable in an inner block, the variable in the outer block is hidden until the inner block terminates.	()
2. Each open file must have a separately declared pointer of type FILE that is used to refer to the file.	()
3. A structure variable can be assigned to another structure if both have the same type.	()
4. If fp is a pointer to float data type (float *fp;), then pf++ will increment its value by 4.	()
5. The preferred storage class specifier if fast access is required for a variable is register.	()
6. The function rewind () reposition the File Position Indicator to the beginning of the file.	()
7. When an argument is passed by reference, a copy of the variable's value is made and the copy is passed to the called function. Changes to the copy in the called function do not affect the original variable's value.	()
8. w+ open file for reading and appending. The file is created if it does not exist. The initial file position for reading is at the beginning of the file, but output is always appended to the end of the file.	()
9. An enum defines a set of integer constants. Values in an enum start with 1, unless specified otherwise, and are incremented by 1.	()
10. In a union, space is allocated to every member individually.	()

Question Three: (30 Marks)

1. Given the following definition

```
enum Bscolour {BLACK, BLUE , GREEN = 4, RED , YELLOW };
```

Answer the questions A to D based on the previous definition (Bscolour),

A. Declare a variable color from the previous Data Type ? (1 Mark)

B. color =BLUE;

What will be the output of the print statement printf(“ %d”, color);? (1 Mark)

C. color =YELLOW;

What will be the output of the print statement printf(“ %d”, color); ? (1 Mark)

D. Give new name colour to the previous data type (enum Bscolour)? (2 Marks)

2. Given the following declaration

```
int ar [ 5 ] = { 1 , 3 , 5 , 7 , 9 };
```

Answer the questions A to H based on the previous array (ar) declaration ,For each write a statement that performs the indicated task:

A. Declare two pointers Ptr1 and Ptr2 . (2 Marks)

B. Let Ptr1 point to the first element in array ar. (1 Mark)

C. Let Ptr2 point to the last element in array ar. (1 Mark)

D. What is the value stored at *Ptr1 ? _____ . (1 Mark)

E. What is the value stored at *Ptr2 ? _____ . (1 Mark)

F. What is the value stored at * (Ptr1 + 3) ? _____ . (1 Mark)

G. What value is stored at * Ptr1 + 3 ? _____ . (1 Mark)

H. Give two separate (منفصلين) statements that assign the starting address of array ar to pointer variable Ptr1 . (2 Marks)

3. Given the following statement

```
file = fopen ("finalexam" , "a");
```

Answer the questions A to H based on the previous statement

A. Write statement that request from operating system to allocate memory to the file stream.? (1 Marks)

B. What is the purpose of the opening file? (1 Mark)

C. What is the type of the file? (1 Mark)

D. What is the physical file name? (1 Mark)

E. What is the logical file name? (1 Mark)

F. Write statement which move File Position Indicator 10 byte from the End of File?(2Marks)

G. Write statement which prints the current position of the File Position Indicator? (2 Marks)

H. Write statement which free (release) allocated memory to the file? (1 Mark)

4. Consider we opened Text file with physical file name "subject.txt" and logical file name fp , the file contain data "Advanced Programming Method " . After that the file is opened for the second time and used the function fputs ("using c",fp); to write string into the file . Given the following figure, Write fopen () function for each figure to determine file Mode. (6 Marks)

```
using c
```

Figure 1

```
Advanced  
Programming Method  
using c
```

Figure 2

```
using cd Programming  
Method
```

Figure 3

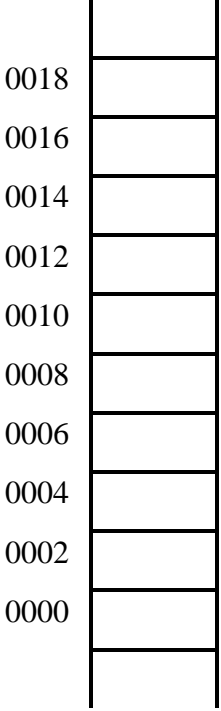
Figure 1: _____

Figure 2: _____

Figure 3: _____

Question Four: (25 Marks)

1. Study the following C programs and find the output?

Program 1 (5 Marks)	Draw Memory layout Here	Output
<pre>#include <stdio.h> void main() { int V1 = 25 , V2 ; int *p1, *p2; p1 = &V1; V2 = *p1 / 5 + 5 p2 = p1; printf("Values at p1: %d \t p2: %d \t and V1: %d \t V2 :%d \n", *p1, *p2,V1, V2); *p1 = *p2 + 2 printf("Values at p1: %d \t p2: %d \t and V1: %d \t V2 :%d \n", *p1, *p2,V1, V2); }</pre>	 <p>A vertical ladder-like diagram representing memory addresses. On the left side, addresses are listed from 0000 at the bottom to 0018 at the top in increments of 2 (0000, 0002, 0004, 0006, 0008, 0010, 0012, 0014, 0016, 0018). On the right side, there are 10 horizontal bars representing memory slots corresponding to these addresses.</p>	

2. Write a c program having a recursive function Reverse() which accept pointer to string as parameter then display sting in reverse order,for example if the string is program ,the reverse is margorp , in the main () function read the string and then using the function Reverse() to print the string? (10 Marks)

3. Write a function *Detect* () that accept a symbol as argument, the function determine whether the character is a capital letter, a small letter or a digit ,in case capital letter the function return ‘C’ , in case small letter return ‘S’ , in case digit return ‘D’? (10 Marks)

Question Five: (25 Marks)

Write a C program that creates the following

1. Define Product structure which contains the fields (ProductNumber , ProductName, Fee, cost structure which contains the fields (UnitPrice , Quantity)). (5 Marks)
2. Write the function CalculateFee() Which read information about 50 Products from user and calculate the Fee(where $Fee = UnitPrice * Quantity$) for each Product then store them in a binary file named “Product_Data”. (5 Marks)
3. Write the function search() that search the binary file “Product_Data” for a specific Product by ProductName. (5 Marks)
4. Write the function menu () that show the following menu and gets the option from the user then return it. (5 Marks)
 1. Insert Product Data
 2. Search For specific Product
 3. Exit
5. The program should be interactive with user. (5 Marks)

