



كلية تكنولوجيا الصناعة والطاقة



Information Technology Department
2rd Year



جامعة برج العرب التكنولوجية
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جامعه برج العرب التكنولوجيه

Course: Semester:1 st term 2025/2026	Lecturers: Dr. Nehal El Azaly Dr. Ghada Fathy
Programming Essentials in C++ Tutorial 8 Sheet (8) Pointers & 2-D Arrays	

Part A: True or False (10 Questions)

Instructions: Write **T** for True or **F** for False in the space provided.

1. ___ A two-dimensional array is an array of arrays.
2. ___ The syntax `int arr[3][4];` declares a 2D array with 4 rows and 3 columns.
3. ___ The first index in a 2D array always represents the row.
4. ___ You can access an element of a 2D array using `arr[i][j]`.
5. ___ In C++, a pointer is a variable that stores the memory address of another variable.
6. ___ The `&` operator is used to display the value stored at a pointer's address.
7. ___ The `*` operator is used to access the value pointed to by a pointer.
8. ___ You can modify the value of a variable in memory using a pointer.
9. ___ Declaring a pointer does not allocate memory for the variable it points to.
10. ___ Pointers cannot store the address of arrays.

Part B: Multiple Choice Questions (10 Questions)

Instructions: Circle the correct answer.

1. What is the correct way to define a 2D array of integers with 2 rows and 3 columns?
 - a) `int arr[2,3];`
 - b) `int arr[2][3];`
 - c) `int arr[3][2];`
 - d) `int arr(2,3);`
2. How do you access the element in the first row, second column of a 2D array `arr`?
 - a) `arr[0][1]`
 - b) `arr[1][0]`
 - c) `arr[1][1]`
 - d) `arr[0][2]`
3. Which of the following statements is true about pointers?
 - a) Pointers store the value of a variable.
 - b) Pointers store the memory address of a variable.
 - c) Pointers can only point to integers.
 - d) Pointers cannot be dereferenced.
4. What does the `*` operator do when used with a pointer?
 - a) Assigns a new address to the pointer
 - b) Accesses the value stored at the address the pointer points to
 - c) Displays the memory address
 - d) Declares a pointer
5. If `int x = 10;` and `int *p = &x;`, what does `*p = 20;` do?
 - a) Changes the value of `p`
 - b) Changes the value of `x` to 20
 - c) Causes an error
 - d) Displays the address of `x`

6. How can a user input elements into a 2D array `arr[2][3]`?
- a) Using a single `cin` statement for the whole array
 - b) Using nested `for` loops
 - c) Only by initializing during declaration
 - d) Using pointer arithmetic only
7. What will `cout << &x;` display if `x` is an integer variable?
- a) The value of `x`
 - b) The address of `x` in memory
 - c) A pointer to a pointer
 - d) Nothing
8. What is the type of `&x` if `x` is an integer?
- a) `int`
 - b) `int*`
 - c) `float*`
 - d) `double`
9. Which of the following is the correct syntax to declare a pointer to an integer?
- a) `int p;`
 - b) `int *p;`
 - c) `int &p;`
 - d) `*int p;`

Part C: Programming Exercises

Instructions: Write C++ programs for the following:

1. Write a program to declare a 2x3 2D array, initialize it with numbers, and display all values.
2. Write a program to ask the user to enter elements for a 2x2 2D array and print them.
3. Write a program to declare an integer variable x , a pointer p pointing to x , display the address of x , and display the value of x using the pointer.
4. Write a program to modify the value of a variable x using a pointer and display the new value.