

CSSE 132 – Introduction to Systems Programming  
 Rose-Hulman Institute of Technology

Quiz 7 Pointer & Array

Name (Print): \_\_\_\_\_ RHIT Username: \_\_\_\_\_

1. Complete the following table about pointer syntax.

| Operation                                                | Syntax | Example |
|----------------------------------------------------------|--------|---------|
| Define a pointer variable                                |        |         |
| Extract the address of a variable to assign to a pointer |        |         |
| Dereference (get the data where a pointer points to)     |        |         |

2. What does the following code print out? Draw a pointer diagram to show the logic.

```

1  int x = 2;
2  int y = 0;
3  int z;
4  int* xp;
5  xp = &x;
6  *xp = y;
7  z = *xp;
8  printf("x = %d, y = %d, z = %d\n",
9         x, y, z);

```

The screen print out of the code is:

3. What is the size of a pointer (any pointer type) on a 64-bit machine?  Bytes

4. Finish the following questions about pointer arithmetic.

- Given a pointer `ptr` with a type `X*`, `ptr + N` points to ,

i.e., the memory address in Assembly increases by  ;

- Calculate the value of the `xp`.

(a) `int* xp = 0x10;`  
`xp += 2;`

`xp:`

(b) `char* xp = 0x10;`  
`xp += 4;`

`xp:`

(c) `char** xp = 0x10;`  
`xp += 2;`

`xp:`

5. Given an array `int my_array[10]`, what does the array name `my_array` represent?

The array name is the

of the array, i.e.,

of the

first entry.

Write the equivalent ways of accessing an array (say `T`) in the table below:

| Operation                                                  | Array Way            | Pointer Way          |
|------------------------------------------------------------|----------------------|----------------------|
| Access the entry with the index <code>N</code>             | <input type="text"/> | <input type="text"/> |
| Get the address of the entry with the index <code>N</code> | <input type="text"/> | <input type="text"/> |

6. Given an `int` array `A` with **7** entries (indexed 0 through 6), which statement will increment (add one to) the value of the entry with index 3, i.e., `A[3]`?

- (a) `(A+3)++;`
- (b) `*(A+3) = A[3] + 1;`
- (c) `A+3 = (A + 3)+ 1;`
- (d) `*(A+(3*4)) = 1 + *(A+3);`

7. **Reflection:** What is one thing from this topic that you found interesting, OR what is one question you are now curious to learn more about?