ARICENT: First Mile Foundation Program

Quiz 2 Solutions

For questions, refer to the Quiz page. Only the solutions are given below

1. **Answer : A**
   Both pointers and array can be used to store a string.

2. **Answer : D**
   The program may crash is the correct answer. But modern compiler will take care of this kind of situations.

3. **Answer : B**
   
   **++*ptr** increments the value being pointed to by ptr.
   
   ***ptr++** means grab the value of (*ptr) and then increment it.

4. **Answer : B**
   It is an array which can store integer pointers

5. **Answer : C**
   In line 5, *p1 = 10; so the value of variable x is changed to 10.
   In line 6, *p2 = *p1 → value of variable y is changed to 10
   In line 7, p1 = p2 → pointer p1 points to variable y now
   In line 8, *p1 = 20 → value of variable y is now changed to 20

6. **Answer : C, D**
   A void pointer is a pointer that has no associated datatype with it. It can hold address of any datatype and can be typecasted to any datatype.

7. **Answer : C**
   Program is calculating string length using pointer.

8. **Answer : B**
   
   a => base address of multidimensional array
   (a+1) => increments the value of array pointer by 1 that in turn points to row 2 of array(property of multidimensional array pointer as it points to array of pointers(which are pointing to 1D arrays)).
   (*{a+1}+2) now points to exact same location as a[1][2].

9. **Answer : B**
   If statement will compare the base address of two arrays ‘a’ and ‘b’,and they are not same. So condition becomes false and program prints “no”
10. **Answer:** B
   Addition of pointers are not valid in C, whereas subtraction is allowed.

11. **Answer:** C
   Assume the following memory locations for different strings and the pointers.

   \[
   \begin{array}{c|c|c}
   & B & A \\
   \hline
   C & 116 & C \\
   & 108 & ++ \\
   & 124 & JAVA \\
   & 100 & PHP \\
   \end{array}
   \]

   \[
   \begin{array}{c}
   C = B \text{ will initialize it to 200.} \\
   ++C \Rightarrow C \text{ has address 208} \\
   {*}C+1 \Rightarrow \text{its pointing to next location of 108 (116)} \\
   *{(*C+1)+1} \Rightarrow \text{pointing to 2nd character at 116} \\
   \text{printing } *{(*C+1)+1} \text{ will print all characters from 2nd character of JAVA}
   \end{array}
   \]

12. **Answer:** A
   Multidimensional arrays are indexed in the order of highest to lowest. Here, a[x] and *(a+x) refer to the same “plane”. Pointer arithmetic is done internally by the compiler the way it is suggested in the answers.

13. **Answer:** B
   \[
   \begin{align*}
   abc[3] &= r = 114(\text{ASCII}) \\
   abc[4] &= o = 111(\text{ASCII}) \\
   &= (abc + 114 - 111) \\
   &= (abc + 3)
   \end{align*}
   \]

14. **Answer:** A
   int indicates an integer variable
   int * indicates a pointer to an integer variable
   int ** indicate a pointer to pointer to an integer variable

15. **Answer:** A
   Subtracting pointers gives total number of objects between them.
16. **Answer : A**

I is valid, assigning value to pointer A[2],

II is valid, possible due to array styled indexing of pointers

IV is valid, simple assignment to 2-dimensional array

Example:

```c
int *A[10], B[10][10];
int C[2]={1,6};
A[2][1]=5;
B[2][3]=4
```

17. **Answer : D**

`strlen`: Computes string length

`strchr`: Search string for a character

`strcat`: Concatenating two strings

`strcmp`: Compare two strings