

Week 7 Assignment Solution

1. Which of the following statements are correct?

- 1) A string is a collection of characters terminated by '\0'.
- 2) The format specifier %s is used to print a string.
- 3) The length of the string can be obtained by strlen().
- 4) strcon() function is used to join two strings.

- a) 1,2
- b) 1,2,3
- c) 2,4
- d) 1,3

Solution: (b) Clearly, we know first three statements are correct, but fourth statement is wrong because strcat() is used to join two strings in C.

2. The right method of initializing a 2D array is

- a) `int abc[2][2] = { 1, 2, 3 ,4 }`
- b) `int abc[][] = { 1, 2, 3 ,4 }`
- c) `int abc[2][] = { 1, 2, 3 ,4 }`
- d) all of the above

Solution: (a) The valid initialization is option (a). Next two are invalid declaration because the second dimension must be specified.

3. Array passed as an argument to a function is interpreted as

- a) Address of all the elements in an array
- b) Value of the first element of the array
- c) Address of the first element of the array
- d) Number of element of the array

Solution: (c) Address of the first element of the array or the base address of the array.

4. What will be the output?

```
#include <stdio.h>
int main()
{
    int disp[3][4] = {{5, 6, 8, 2}, {4, 5, 3, 7}, {1,10,13,15}};
    printf("%d\n", disp[2][1]);
    return 0;
}
```

Solution: 10 (short answer type)

5. Find the output of the following C program.

```
#include <stdio.h>
int main()
{
    char a[10][8] = {"hi", "hello", "fellows"};
    printf("%s", a[2]);
    return 0;
}
```

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- a) fellows
- b) h
- c) fello
- d) Compiler error

Solution: (a) a[2] indicates the 3rd string of the 2D array. Thus fellows will be printed.

6. What will be the output?

```
#include <stdio.h>
int main()
{
    char str1[] = "Week-7-Assignment";
    char str2[] = {'W', 'e', 'e', 'k', '-', '7', '-', 'A', 's', 's', 'i', 'g', 'n', 'm', 'e', 'n', 't'};
    int n1 = sizeof(str1)/sizeof(str1[0]);
    int n2 = sizeof(str2)/sizeof(str2[0]);
    printf("n1 = %d, n2 = %d", n1, n2);
    return 0;
}
```

- a) n1=18, n2=17
- b) n1=18, n2=18
- c) n1=17, n1=17
- d) n1=17, n2=18

Solution: (a) The size of str1 is 18 and size of str2 17.

When an array is initialized with string in double quotes, compiler adds a '\0' at the end.

7. Consider the following C program segment:

```
#include<stdio.h>
#include<string.h>
int main()
{
    char p[20];
    char s[] = "string";
    int length = strlen(s);
    int i;
    for (i = 0; i < length; i++)
        p[i] = s[length - i];
    printf("%s", p);
    return 0;
}
```

The output would be-

- a) gnirts
- b) gnirt
- c) string

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d) no output is printed

Solution: (d)

Let us consider below line inside the for loop $p[i] = s[\text{length} - i];$

For $i = 0$, $p[i]$ will be $s[6 - 0]$ and $s[6]$ is $'\0'$

So $p[0]$ becomes $'\0'$. It doesn't matter what comes in $p[1]$, $p[2]$ as $P[0]$ will not change for $i > 0$. Nothing is printed if we print a string with first character $'\0'$

8. If the starting address of an float array $\text{Arr}[10][10]$ is 2000, what would be the memory address of the element $\text{Arr}[5][6]$? (float takes 4 bytes of memory)

- a) 2268
- b) 2120
- c) 2224
- d) 2144

Solution: (c) If 'a', 'b' and 'c' denotes the starting address, number of columns and size in bytes for each element respectively of array $\text{Arr}[][]$, then the location of $\text{Arr}[i][j]$ can be calculated as

$$\text{Address} = a + (i * b + j) * c$$

Thus the address of $\text{Arr}[5][6]$ is $2000 + (5 * 10 + 6) * 4 = 2224$

9. In C, the placement of elements of a two dimensional array is

- a) Row wise
- b) Column wise
- c) Diagonal wise
- d) Bottom to top wise

Solution: (a) In C the placement of 2D array in memory is row wise.

10. What will be the value of 'i' after the execution of the C code fragment given below?

```
static char str1[] = "dills";
static char str2[20];
static char str3[] = "daffo";
int i;
i = strcmp(strcat(str3, strcpy(str2, str1)), "daffodills");
```

Solution: 0 (short answer type)

$\text{strcat}(\text{str3}, \text{strcpy}(\text{str2}, \text{str1}))$ makes it "daffodills", hence $\text{strcmp}(\text{"daffodills"}, \text{"daffodills"}) = 0$