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 using the function strlen().
    4) The pointer cannot work on string

    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 we can use pointer on strings. E.g. char *p = "week-7"

2. The correct 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;
}
```

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
d) Nothing is printed

Solution: (d)
Let us consider below line inside the for loop p[i] = s[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 a floating point array Arr[10][10] is 2000, what would be the memory address of the element Arr[5][6]? (considering 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 Arr[][], then the location of Arr[i][j] can be calculated as

$$Address = a + (i * b + j) * c$$

Thus the address of 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)

strcat(str3, strcpy(str2, str1)) makes it “daffodills”, hence strcmp(“daffodills”, “daffodills”)=0