1. The searching operation in an array is done using
   a) Key and index
   b) Only key
   c) Only index
   d) None of these

Solution: (a) Both key and array index are used to perform search operation in arrays.

2. 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.

3. 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.

4. 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) no output 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'

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

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

a) 0
b) 1
c) -1
d) None

Solution: (a) 0

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

6. If the starting address of an float array Arr[10][10] is 2000, what would be the memory address of the element 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 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

7. 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.

8. What will be the output?
   ```c
   # include <stdio.h>
   int main()
   {
       int a[2][3] = {1, 2, 3, 4};
       int i = 0, j = 0;
       for (i = 0; i < 2; i++)
       for (j = 2; j >=0; j--)
       printf("%d", a[i][j]);
     return 0;
   }
   ```

Solution: 321004
 In a[2][3] = {1, 2, 3, 4}; only 4 values are given. The rest will be taken as 0. So, finally a[2][3] = {{1, 2, 3}, {4,0,0}}; So, 321004 will be printed as per the given for loop.

9. What will be the output?
   ```c
   #include<stdio.h>
   int main()
   {
     int i;
     char a[] = "";
     if(printf("%s", a))
        printf("The string is empty");
     else
        printf("The string is not empty");
     return 0;
   }
   ```

   a) The string is empty
   b) The string is not empty

      c) Error
      d) None

Solution: (b) The string is not empty

10. What is the output of the following C code?
```
#include <stdio.h>
int main()
{
   int ary[3][3];
   ary[][] = {{1, 2, 3}, {4, 5, 6},{7,8,9}};
   printf("%d\n", ary[2][0]);
   return 0;
}
```

a) Compilation error
b) 7
c) 1
d) 2

Solution: (a) The initialization method of the array is not valid in C. The second dimension must be specified.