Task-1c

View memory layout of 1d and 2d array and strings.

```c
#include<stdio.h>
#include<stdlib.h>

int main()
{
    int arr[10]={1,2,3,4}; //1d array
    int arr1[3][3]={1,2,3,4,5,6,7,8,9}; //2d array
    char str[20]="hello world"; //1d array
    char str1[4][20]={"gfg","accompany","udemy","coursera"}; //2d array
    return 0;
}
```

Memory layout 1d array and printing it in gdb.

```
Breakpoint 1, main () at program1.c:9
9       {
(gdb) next
10      int arr[10]={1,2,3,4};//1d array
```

```
(gdb) x/10xw arr
0x7fffffffdf50: 0x00000001      0x00000002      0x00000003      0x00000004
0x7fffffffdf60: 0x00000000      0x00000000      0x00000000      0x00000000
0x7fffffffdf70: 0x00000000      0x00000000
```

```
(gdb) p *arr@10
$3 = {1, 2, 3, 4, 0, 0, 0, 0, 0, 0}
```

Memory layout 2d array and printing it in gdb.

```
(gdb) next
11      int arr1[3][3]={1,2,3,4,5,6,7,8,9}; //2d array
```

```
(gdb) x/9xw arr1
0x7fffffffdf20: 0x00000001      0x00000002      0x00000003      0x00000004
0x7fffffffdf30: 0x00000005      0x00000006      0x00000007      0x00000008
0x7fffffffdf40: 0x00000009
```

```
(gdb) p arr1
$17 = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}}
```

Memory layout of 1d string and printing it in gdb.

```
(gdb) next
12      char str[20]="hello world"; //1d array
```

```
(gdb) x/11xc str
0x7fffffffdfd0: 104 'h' 101 'e' 108 'l' 108 'l' 111 'o' 32 ' '  119 'w' 111 'o'
0x7fffffffdfd8: 114 'r' 108 'l' 100 'd'
```

```
(gdb) p *str@11
$14 = "hello world"
```

Memory layout of 2d string and printing it in gdb.

```
(gdb) next
13      char str1[4][20]={"gfg","accompany","udemy","coursera"}; //2d array
```

```
(gdb) x/80xc str1
0x7fffffffdf80: 103 'g' 102 'f' 103 'g' 0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'
0x7fffffffdf88: 0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\
000'
0x7fffffffdf90: 0 '\000'        0 '\000'        0 '\000'        0 '\000'        97 'a'  99 'c'  99 'c'  111 'o'
0x7fffffffdf98: 109 'm' 112 'p' 97 'a'  110 'n' 121 'y' 0 '\000'        0 '\000'        0 '\000'
0x7fffffffdfa0: 0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\
000'
0x7fffffffdfa8: 117 'u' 100 'd' 101 'e' 109 'm' 121 'y' 0 '\000'        0 '\000'        0 '\000'
0x7fffffffdfb0: 0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\
000'
0x7fffffffdfb8: 0 '\000'        0 '\000'        0 '\000'        0 '\000'        99 'c'  111 'o' 117 'u' 114 'r'
0x7fffffffdfc0: 115 's' 101 'e' 114 'r' 97 'a'  0 '\000'        0 '\000'        0 '\000'        0 '\000'
0x7fffffffdfc8: 0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\000'        0 '\
000'
```

```
(gdb) p str1
$18 = {"gfg", '\000' <repeats 16 times>, "accompany\000\000\000\000\000\000\000\000\000\000", "udemy", '\000' <repeats 14 times>,
  "coursera", '\000' <repeats 11 times>}
```