# CS & IT ENGINEERING

## Programming in C

**Arrays and Pointer – 1**

**DPP 01** Discussion

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# TOPICS TO BE COVERED

- 01 Question
- 02 Discussion

## Q.1

Which of the following declarations are INVALID? [MSQ]

A. int b[][4]; Invalid

B. int b[]; Invalid

C. int b[2][][2]={1,2,3,4}; Invalid

D. int b[][2][2]={1,2,3,4}; ✓ Valid

A, B, C

**Q.2** Consider the following two statements: **[MCQ]**

2++ , --2 Invalid

P: int a[3]={1, 2, 3};
printf(“%d”, *a++); → Invalid Incorrect

Q: int a[3]={1, 2, 3};
int * p=a;
printf(“%d”, *p++);

Correct

Which of the following statements is/are CORRECT?

A. P only.

[✓ B.] Q only.

C. Both P and Q.

D. Neither P nor Q.

## Q.3

[MCQ]

Consider the following program:

```
#include<stdio.h>
int main(void)
    {
        int a[5]={5, 10, 15};
        printf("%d", 1[a]);
        return 0;
    }
```

valid

$1[a]$

$\Rightarrow a[1]$

| 5 | 10 | 15 | 0 | 0 |
|---|---|---|---|---|
| a[0] | a[1] | a[2] | a[3] | a[4] |

$$a[i] \equiv *(a+i) \equiv *(i+a)$$

$$\equiv i[a]$$

The output is-

A. 5

[✓ B.] 10

C. Garbage value

D. Compilation error

## Q.4

Consider the following program:

[MCQ]

```
#include<stdio.h>
int main(void)
  {
     int 5[a]={5, 10, 15};
     printf("%d", 1[a]);
     return 0;
  }
```

Invalid/Error

int 5[a];

int

The output is-

A. 5

B. 10

C. Garbage value

[✓ D.] Compilation error

## Q.5

[MCQ]

Consider the following program:

```
#include<stdio.h>
int main(void){
        int a[5]={5, 10, 15, 20, 25};
1000 ←  printf("%u", a);
  20 ←  printf("%u", *(a+3));
1004 ←  printf("%u", a+2);
  21 ←  printf("%u", *(a+2)+6);
  25 ←  printf("%u",*(a+*(a+1)-6));
        return 0;
    }
```

| ~~5~~ | 10 | 15 | 20 | 25 |
|---|---|---|---|---|
| a[0] | a[1] | a[2] | a[3] | a[4] |
| 1000 | 1002 | 1004 | 1006 | 1008 |

add. of first element ⇒ $\&a[0]$

$*(a+3) \equiv a[3]$

$a+2 \equiv \underbrace{\&a[0]}_{\text{Add}} + 2$

$\Rightarrow \&a[0] + 2\times 2$

$\Rightarrow 1000+4 \Rightarrow 1004$

$\Rightarrow \&a[2]$

$\underline{*(a+2)}+6 \Rightarrow a[2]+6$

$15+6 = 21$

Assuming the base address of the array to be 1000 and integer size as two bytes the output is-

$*(a + \underline{*(a+1)} - 6)$

$*(a + a[1] - 6)$

$*(a+10-6) \Rightarrow *(a+4) \rightarrow a[4]$

[✓ A.] 1000 20 1004 21 25

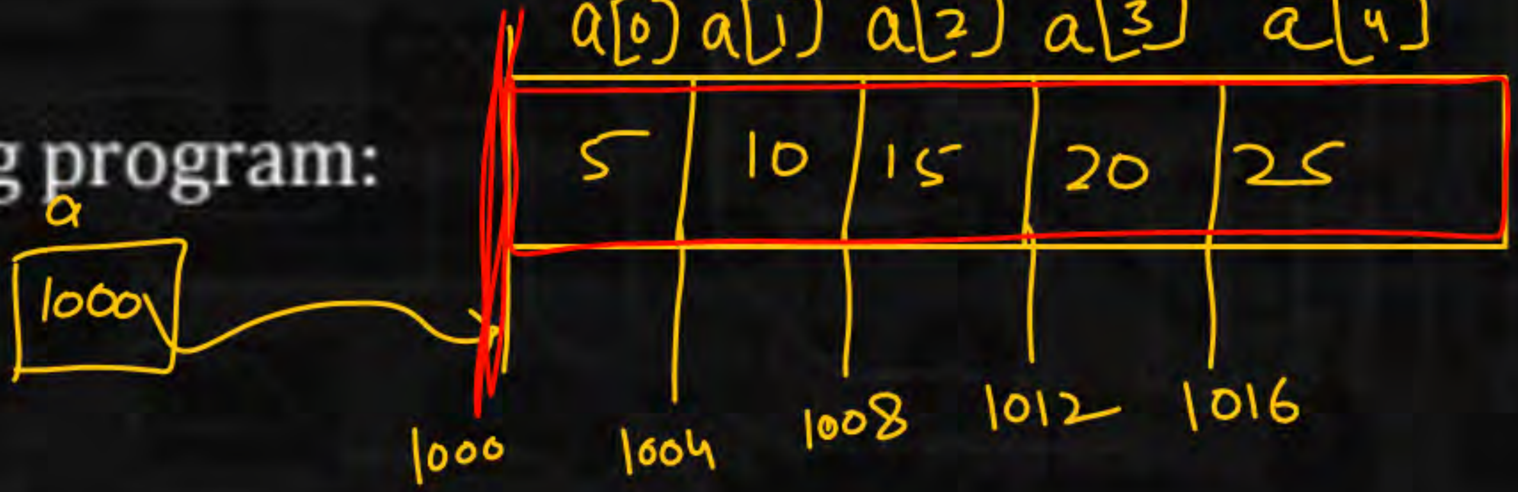
B. 5 20 15 21 25

C. 1000 20 1002 21 24

D. Compilation error

## Q.6

Consider the following program: **[MCQ]**



```
#include<stdio.h>
int main(void)
    {
        int a[5]={5, 10, 15, 20, 25};
        printf("%u\t", *(1+a));
        printf("%u\t", &a+1);
        return 0;
    }
```

10 ←

1020

(C)

$\rightarrow$ $*(1+a) \equiv *(a+1) \equiv a[1]$

$\underbrace{\&a}_{\text{Which add.}} + 1 \Rightarrow \&a + 1 \times 20$

Which add. → Entire array

$= 1000 + 20$

$= 1020$

Assuming the base address of the array to be 1000 and integer size as four bytes the output is-

A. 1004 1020

B. 10 1016

[✓ C.] 10 1020

D. 1004 1016

THANK YOU GW SOLDIERS !