

1. Using the variable x, give definitions for the following:

- (a) An integer
- (b) A pointer to an integer
- (c) An array of 10 integers
- (d) An array of 10 pointers to integers

a) `int x`
b) `int* x`
c) `int x[10]`
d) `int* x[10]`

2. What is the output of the following C program?

```
#include <stdio.h>

int main ()
{
    int vals[5] = {4, 3, 2, 5, 1};
    int i;
    for (i=0; i<=5; i++) {
        printf("vals[%d]=%d\n", i, vals[i]);
    }
    return 0;
}
```

Output=

`vals[0]=4`
`vals[1]=3`
`vals[2]=2`
`vals[3]=5`
`vals[4]=1`
`vals[5]=0`

3. (a) What is the output of the following C program?

```
#include <stdio.h>
void fun(int y)
{
    y = 30;
}
int main()
{
    int y = 20;
    fun(y);
    printf("%d", y);
    return 0;
}
```

output: 20

- (b) In the program above, is the variable y in main() stored on the stack or on the heap?

It is stored on the stack

- (c) What is the output of this C program?

```
#include <stdio.h>
void fun(int *y)
{
    *y = 30;
}
int main()
{
    int y = 20;
    fun(&y);
    printf("%d", y);
    return 0;
}
```

Output:
30

- (d) In the program above, is the variable y in main() stored on the stack or on the heap?

It is stored on the stack

- (e) True or false: &y in main() and y in fun() have the same value.

True