EL-GY 6483 Name: Hongdao Meng

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;
}
```

vals[0] = 4
vals[1] = 3
vals[2] = 2
vals[3] = 5
<? random garbage value ?>

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;
}
```

20

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

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;
}
```

30

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

stack

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

True