CS 300 Data Structures
Problem Set #2 Pointers and Reference Variables

1. A pointer can be initialized with
   a. NULL
   b. Zero
   c. Address of an object of same type
   [✓ d.] d. All of them

int* p=NULL; ✓
int* p=0; ✓
int x=5; ✓
int* p=&x;

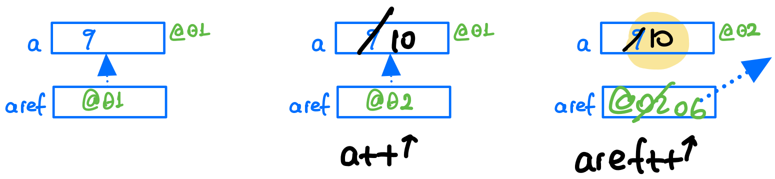
2. Choose the right option

```
string* x, y;
```

[✓ 1.] x is a pointer to a string, y is a string
2. y is a pointer to a string, x is a string → string x, *y;
3. Both x and y are pointers to string types → string* x, *y;

3. What is the output of this program?

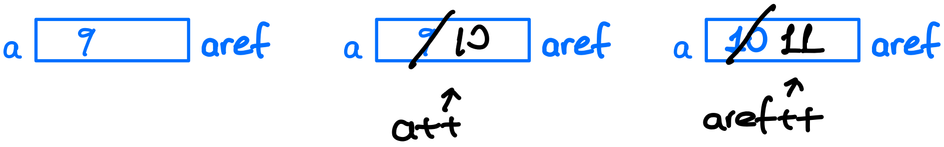
```
int a = 9;
int *aref = &a;
a++;
aref++;
cout << a;
```



[✓ a.] 10
b. 11
c. 12
d. Compile-time error
e. Run-time error

2. What is the output of this program?

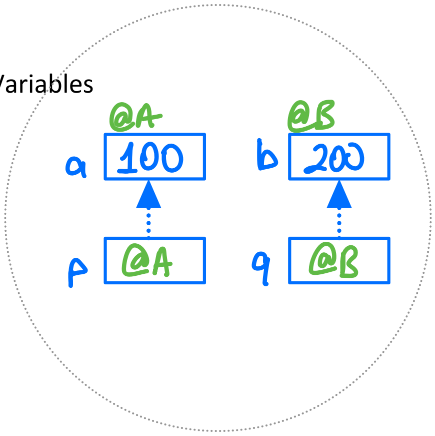
```
int a = 9;
int &aref = a;
a++;
aref++;
cout << a;
```

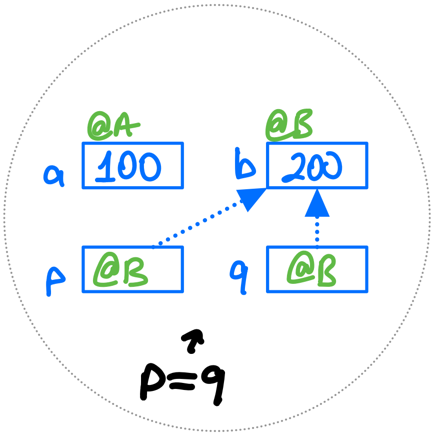


a. 10
[✓ b.] 11
c. 12
d. Compile-time error
e. Run-time error

3. What will happen in this code?

```
int a = 100, b = 200;
int *p = &a, *q = &b;
p = q;
```

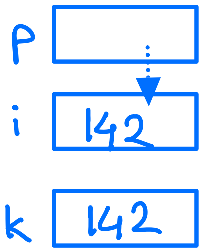




a. a is assigned to b
b. b is assigned to a
c. Run-time error
d. Compile-time error
e. p now points to a
[✓ f.] p now points to b

4. After the following statements, which option changes the value of i to 143?

```
int *p;
int i, k;
i = 142;
k = i;
p = &i;
```



← *p=143
or
i=143

a. k = 143;
b. *k = 143;
c. p = 143;
[✓ d.] *p = 143;
e. Both (a) and (c)

5. Choose the correct answer for following piece of C++ pseudo code

```
void func(int a, int &b)
{
}
int main(){
    int a,b;
    func(a,b);
}
```

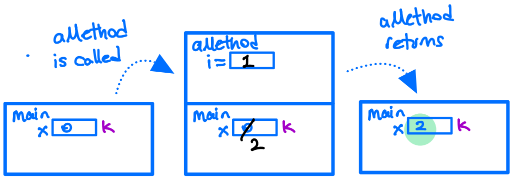
CALL BY VALUE

CALL BY REFERENCE

[✓ 1.] a is pass by value and b is pass by reference
2. a is pass by reference and b is pass by value
3. a is pass by value and b is pass by address
4. a is pass by value and b is pass by pointer

6. What is the output of this program?

```
void aMethod(int i, int &k) {
    i = 1;
    k = 2;
}
int main () {
        int x = 0;
        aMethod(x, x);
        cout << x << endl;
        return 0;
}
```



[✓ a.] 2
b. 1
c. Run-time error
d. 0
e. Compile-time error