

This is a pen and paper exercise, write all answers on a piece of paper (yellow pad or bond paper), then submit a photo or scanned image of your answers.

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Section: ST - 2L

I. (0.5 pts each) Given the variable declarations below, write V in the blank provided if the statement in each item is (semantically and syntactically) valid. Write I, otherwise.

```
char **cptr, *c, x = 'A', y = 'B', z = '2';
```

```
int v, w = 7, *p1, *p2, **pptr;
```

✓ 1. `cptr = &c;`

✓ 2. `p1 = &v;`

✓ 3. `pptr = &p1;`

✓ 4. `c = &y;`

I 5. `pptr = &v;`

I 6. `pptr = p2;`

I 7. `cptr = &p2;`

✓ 8. `p2 = *pptr;`

✓ 9. `*p1 = 21;`

✓ 10. `*c = z;`

II. (0.5 pts each) Executing all valid statements in Test I, write in the blank the **output** of the following statements or the **value** of the variables.

2 1. `y`

21 2. `v`

2 3. `*c`

21 4. `**pptr`

&y 5. `*cptr`

42 6. `(*p2) + (**pptr)`

'2 2' 7. `printf("%c %c", *c, z);`

28 8. `w + w + (*p2 - w)`

28 9. `**pptr + w`

63 10. `*p2 + *p1 + **pptr`

III. (5 pts) Draw on the right column the resulting box-and-arrow diagram of the code snippet from the left. Assume that everything is in the `main()` function. Draw a diagram for each assignment statement to show how the pointers and values change for each assignment statement.

```
1 int x=2, y=3, z=4, *a;
2 int **p, *c, **d;
3
4 p = &c;
5 c = &x;
6 d = p;
7 a = &y;
8 **p = 7;
9 *p = a;
10 **d = *c + **p;
11 *d = &z;
12 *a = x;
```

4) int x [2] y [3] z [4]

int \* a [ ] c [ ]

int \*\* p [ ] d [ ]

5) int x [2] y [3] z [4]

int \* a [ ] c [ ]

int \*\* p [ ] d [ ]

6) int x [2] y [3] z [4]

int \* a [ ] c [ ]

int \*\* p [ ] d [ ]

