

5/2/0 1. Write the size (in bytes) of the type

int	_____	int *	_____
char	_____	double	_____
float	_____	float *	_____
long	_____	short	_____

10/7/5/2/0

2. Rewrite the following C++ code into C code:

```
#include <stdio>
using namespace std;

int main(int argc, char *argv[]){

    int j=10;
    int k;

    cout << "Enter a number" << endl;
    cin >> k;

    cout << "Num+10: " << k + 10 << endl;
}
```

5/2/0 3. Complete the program below so that "Go Navy!" is outputted to standard out and "Beat Army!" is outputted to standard error:

```
#include <stdio.h>
#include <stdlib.h>

int main(int argc, char * argv[]){

    fprintf( _____ , "Go Navy!\n");

    fprintf( _____ , "Beat Army!\n");

}
```

5/2/0 4. Complete the format string format to produce the output:

```
float pi=3.14,e=2.78;
int i=10;

printf( " _____ "
        _____ ,pi, i, i*pi, e);
```

output: "pi=3.14 i=10 and i\*pi=31.4, e=2.78"

10  
(2 points  
each)

5. Label all syntax and logic errors with letter and describe the error in the appropriate box.

```
for( int i=0 ; i<5 , i--){
    printf(i)
}
```

**a**

**b**

**c**

**d**

**e**

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6. Write the corrected code in the box below such that the numbers 0 through 4 are printed on separate lines.

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7. Explain why the output of this program might not be what you expect:

```
unsigned int i = 4294967295;
printf("%d\n",i);
```

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8. What is the output of this program? Explain.

```
int i = 3.1519;
printf("%d\n",i);
```

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9. What is the output of this program? Explain.

```
int i = (int) 1.5 + 2.5 + 3.5 + 4.5
printf("%d\n",i);
```

20  
(4 points  
each)

10. Consider the program below and the stack diagram at mark (0):

```
int main(int argc, char * argv){
    int a=0,b=0,*p;

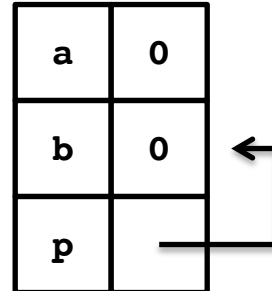
    p = &b;      /* (0) */
    *p = 15;     /* (1) */

    a = b;
    b = 25;     /* (2) */

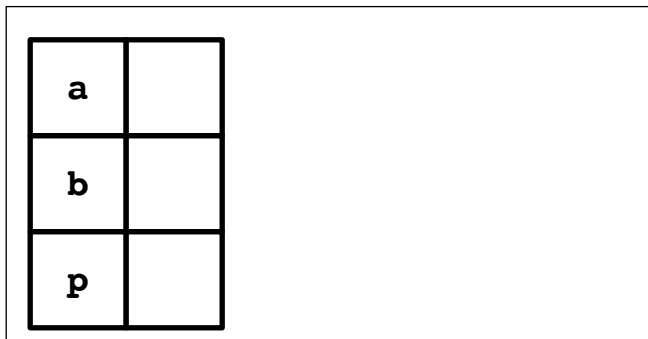
    p = &a;      /* (3) */
    (*p)++;     /* (4) */

    printf("a:%d\n",a);
    printf("b:%d\n",b);
    printf("*p:%d\n",*p);
}
```

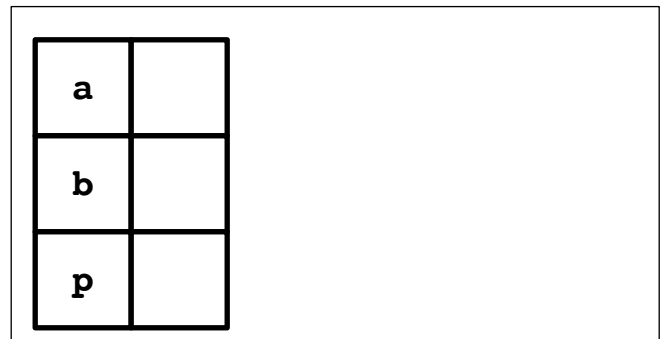
mark (0)



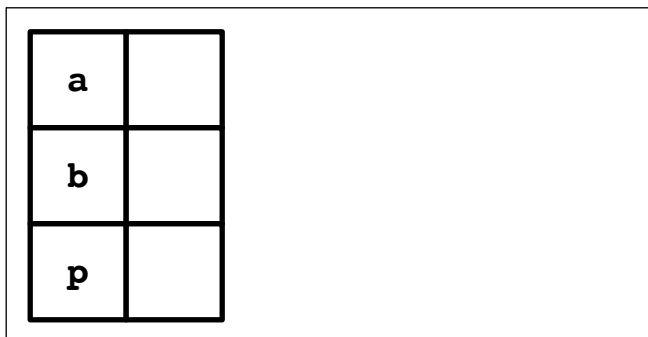
a) Complete the stack diagram at mark (1) and briefly explain.



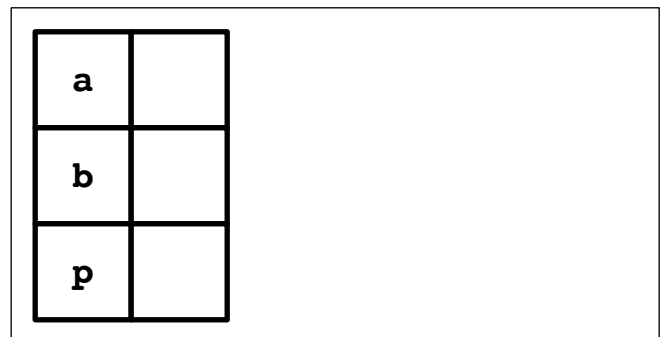
b) Complete the stack diagram at mark (2) and briefly explain.



c) Complete the stack diagram at mark (3) and briefly explain.



d) Complete the stack diagram at mark (4) and briefly explain.



e) What is the output of the program?

5/2/0 11. Fill in the appropriate arguments to the format prints below:

```
struct pair{
    int left;
    int right;
};
```

```
struct pair p;
p.left=20;
p.right=10;
```

```
struct pair *q = &p;
```

```
//using p
printf("p: (%d,%d)\n", )
```

```
//using q
printf("q: (%d,%d)\n", )
```

5/2/0 12. Write a for-loop to copy the values from array **a** to array **b**, backwards. That is **a[0]** should be the last element in array **b**.

```
int a[10];
int b[10];
int i;

for(i=0;i<10;i++){
    a[i] = i/2;
}
```

5/2/0 13. Convert the [ ] operation below to a dereference without [ ]:

```
array[235]
```

5/2/0 14. What is the value of the array after this code runs:

```
//statically declaring an array
int array[10] = {0,1,2,3,4,5,6,7,8,9};
int * p = array+3;
p[0]=2018;
```

15. Why is this code incorrect? 5/2/0

```
int a[10];
int b[10];
//..
b=a; //<--
```