1) In C:
A(n) ____________________ variable has local/function scope and has memory allocated in the Data segment of the run time environment.

A(n) ____________________ variable has local/function scope and has memory allocated in the Stack (stack frame) of the run time environment.

The lifetime of any program part in the BSS is ____________________ .

A(n) ____________________ variable has global scope and has memory allocated in the BSS segment of the run time environment.

The ____________________ is responsible for ensuring the BSS segment in memory is zero-filled before the program starts executing.

The ____________________ is responsible for ensuring all symbols are known/defined.

Which type of linking commonly results in a larger executable? ____________________

Which type of linking ensures all the library code used in the program is fully self-contained in the resulting executable? ____________________

Which type of linking is the default for most compilers/operating systems today? ____________________

2) What gets printed if the following function is invoked as `recurse( 3, 2 )`?

```c
int recurse( int a, int b ) {
    int local = a - b;
    int result = 1;

    if ( a < 8 )
        result = recurse( a + 2, b ) + local;
    else
        result = local + result;

    printf( "%d\n", result );
    return result;
}
```

(over)
3) Given the following program, order the printf lines so that the values that are printed are sorted from smallest to largest if compiled and run on a Sun SPARC architecture. These lines print out the address of the different parts of the program \textit{not the values assigned} with the printf() format specifier %p.

```c
static int a = 404;

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

    int b = 37;
    static int c;

    /* 1 */ (void) printf( "c --> %p\n", &c );
    /* 2 */ (void) printf( "main --> %p\n", main );
    /* 3 */ (void) printf( "b --> %p\n", &b );
    /* 4 */ (void) printf( "argc --> %p\n", &argc );
    /* 5 */ (void) printf( "malloc --> %p\n", malloc(50) );
    /* 6 */ (void) printf( "a --> %p\n", &a );
}
```

This line number would print the smallest value

This line number would print the largest value

4) The keyword ________________ is used to turn off compiler optimizations in C/C++/Java/C#.

What question would you most like to see on the Final Exam?