Midterm #1

25 February, 1994

This is an open books, open notes exam to be turned in by 10:50 AM.

Name: _____

Problem 1 (30 points)

Write fragments of C that demonstrate how you:

(a) declare `v` as an array of 100 integers

(b) declare `b` as an array of 1000 characters

(c) declare `r` as a structure containing two integer fields, `x` and `y`

(d) write the value of the integer `i` to the terminal screen

(e) read a character from the terminal into the variable `c`

(f) read a string from the terminal into the variable `b` you declared in part (b)

(g) open a file called ``imprtant.dat''

(h) set the integer `d` to the remainder that results from dividing the integer `e` by the integer `f`

Problem 2 (15 points)

What is the result of executing the following C statements? Assume that `i` is an integer variable with an initial value of 3.

(a)
```
++i ;
```

(b)
```
if ( i = 1 ) i = 5 ;
```

(c)
```
m = (i>0) ? i : -i ;
```

Problem 3 (15 points)

Fill in the body of the following function which is supposed to add up the first 10 elements of an array and return the result.

```
int addem(int X[])
   {
      /* you write stuff in here */









   }
```

Problem 4. (10 points)

Suppose you are ``playing" the game of life on a 5x6 board and the game has reached the following configuration:

```
------
--*---
----*-
--**--
------
```

where the `*`'s represent live cells and the `-`'s represent dead cells. Circle all the cells in the above diagram that change in the next generation of the game.

Problem 5. (10 points)

How do you create a project file containing `life.c` and `init.c` in Turbo C?

Problem 6. (20 points)

In Chapter 2 of the book, a type for a list containing board coordinates is defined as:

```
#define MAXLIST 200

typedef struct coord_tag {
   int row;
   int col;
} Coord_type ;

typedef Coord_type Entry_type ;

typedef struct list_tag {
   int count;
   Entry_type entry[MAXLIST] ;
} List_type ;
```

(a) How do you declare the variable `L` to be one of these lists?

(b) How do you print the row and column of the third entry in `L`?

(c) How would you initialize `L` to contain a single point (5, 5)?