



In answering the questions on this page, assume the following type definitions and variable declarations have been made:

```

TYPE
  SmallArray = ARRAY[3..6] OF INTEGER ;
  TwoDArray = ARRAY[1..7] OF BigArray ;
  IntPtr = ^ INTEGER ;
  NodePtr = ^ Node ;
  Node = RECORD
    values: SmallArray ;
    next: NodePtr
  END ;

```

```

VAR
  V: SmallArray;
  M: TwoDArray;
  I, J: INTEGER;
  PI, PJ: IntPtr ;
  K, L: NodePtr ;
  N: Node ;

```

**Problem 7: 10 points.**

What happens when the following lines of code are executed?

```

FOR I := 3 TO 303 DO
  V[I] := I;
FOR J := 1 TO 7 DO
  M[J] := V;

```

**Problem 8: 9 points.**

For each of the following eight expressions, state whether the expression is valid or invalid and, if valid, state the type (in general, you can't determine the value) of the expression.

V + 1	L.values[3]
M[3]	PI^ + 5
N[PI]	PI - PJ

**Problem 9: 10 points.**

Draw records that result from executing the following three statements. Be sure to show any pointers that connect the records.

```

NEW(K);
NEW(L);
L^.next := L;
K^.next := L^.next;

```

**Problem 10: 10 points.**

What happens when the following procedure is called with the argument 512. That is, what happens when SillyProc(64) is executed?

```
PROCEDURE SillyProc(N: INTEGER);
BEGIN
  IF N>0 THEN
    BEGIN
      SillyProc(N DIV 10);
      WRITE(OUTPUT, N MOD 10:2)
    END
  ELSE
    WRITELN(OUTPUT)
  END ;
```

**Problem 11: 5 points.**

A few days ago I receive a printout of the UNCA Fall preregistration. Each line of the printout looked something like:

```
CSCI 126 008 BRUNNER 16 32
```

There are six pieces of information in this line:

- (1), the department (always four letters at UNCA),
- (2), the course number,
- (3), the section number,
- (4), the instructor (assume no more than twelve letters),
- (5), the enrollment, and
- (6), the demand (number wanting the course).

Write a definition of a Pascal record type called StuRec to hold these six pieces of information.

```
TYPE
  StuRec = RECORD
```

```
END;
```

Now write a few lines of Pascal to read in one line of input and set the fields a variable S of type StuRec.