

CSCI 201: Introduction to Algorithm Design
Midterm -- February 20

This is an open book exam. You are to turn in this exam at 8:30 PM.

Problem 1: 4 points.

List 4 reserved words in Pascal.

Problem 2: 5 points.

Which of the following are valid integers in Pascal? Circle your choices.

-5 016 1.3 10E2 3000.

Problem 3: 6 points.

Which of the following are valid reals in Pascal? Circle your choices.

17E5. 15E+6 3. 0.3 .003 -5E-5.

Problem 4: 3 points.

Which of the following are valid characters in Pascal? Circle your choices.

'X' X "X"

Problem 5: 2 points.

What character has an ASCII value of 100?

Problem 6: 2 points.

Express the number 3000 in Pascal's exponential notation.

Problem 7: 20 points.

For each of the following seven expressions, state whether the expression is valid or invalid and, if value, state the type and value of the expression.

7 MOD 4

7 MOD -4

3 DIV 4

1000 DIV 1001

7 + '0'

7.0 * (5.0 + 2)

(7.0 < 8.0) AND NOT FALSE

5.0 <> 5

2 < 4 AND 3 <> -3 OR 5 < 6

TRUE AND FALSE OR NOT(TRUE)

Problem 8: 10 points.

Assume that I and J have been declared as integer variables, that R has been declared as a real variable, and B and C have been declared as character variables. What are the values of these five variables after the following READ and READLN statements:

```
READ(INPUT, I);
READLN(INPUT, J, R);
READ(INPUT, B, C, J);
```

has been used to read the following input characters:

```
70 15
70.0 25.0
7 0 40
```

(Assume the character '7' is the first character in each line.)

Problem 9: 5 points.

Suppose the real variable GRADE contains a number between zero and one hundred. Give a WRITELN statement that could be used to produce neatly formatted output similar to:

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where the "99.44" is replaced with the value of GRADE.

Problem 10: 5 points.

Assume the integer variable SSNUM contains a Social Security number, e.g., 123456789. Write a few statements of Pascal to print the social security number in the conventional representation, i.e., 123-45-6789.

Problem 11: 15 points.

Suppose R, S, and T are integer variables. Write a few lines of Pascal to set the integer variable M to the median of the three. For example, if the three variables are 17, 14, and 20, M should be set to 17.

Problem 12: 25 points.

Given an integer variable N, write a loop and associate initialization to assign to the integer P the value 2^N , the result of multiplying 2 by itself N times.