# CPSC 231: Fall 2007 (Review for L02)

## Part I: Written

1. For the linked list implementation of the "investors.p" program that I went over this term, write a display procedure that will show the nodes of the list in their original order using recursion rather than iteration.

2. What is the output of the following program?

```
program pointerExample (output);

type
  CharPointer =  ^char;

procedure proc1 (      ptr1 : CharPointer;
                   var ptr2 : CharPointer);
begin
  ptr1^ := 'A';
  ptr2^ := 'B';
  writeln(ptr1^, ' ', ptr2^);
end;

procedure proc2 (      ptr1 : CharPointer;
                   var ptr2 : CharPointer);
var
  temp : CharPointer;
begin
  new(temp);
  temp^ := '#';
  ptr1 := temp;
  new(temp);
  temp^ := '*';
  ptr2 := temp;
  writeln(ptr1^, ' ', ptr2^);
end;

begin
  var ptr1 : CharPointer;
  var ptr2 : CharPointer;
  new(ptr1);
  new(ptr2);
  ptr1^ := 'a';
  ptr2^ := 'b';
  writeln(ptr1^, ' ', ptr2^);
  proc1(ptr1,ptr2);
  writeln(ptr1^, ' ', ptr2^);
  proc2(ptr1,ptr2);
  writeln(ptr1^, ' ', ptr2^);
end.
```

3. What will be the output of the following program.

```
program arrayExample (input, output);

begin
  var grid   : array [1..3, 1..3] of integer;
  var r      : integer;
  var c      : integer;

  for r := 1 to 3 do
  begin
   for c := 1 to 3 do
   begin
     grid[r][c] := c;
   end
  end;

  for r := 1 to 3 do
  begin
    for c := 1 to 3 do
    begin
      write(grid[c][r]);
    end;
    writeln;
  end;
end.
```

4. For the following program you are to assume that the following declarations have already been made:

```
program gradeTabulator (output);
const
  LENGTH   =  24;
  CLASSSIZE =  300;
type
  Student = record
          firstName   : array [1..LENGTH] of char;
          lastName    : array [1..LENGTH] of char;
          studentID   : integer;
          gpa         : real;
        end;
  Lecture =  array [1..CLASSSIZE] of Student;
```

And the following code fragment:
```
begin
  var lectureOne     : Lecture;
  var lectureThree   : Lecture;

  writeln('Students that passed in L01');
  showPass(lectureOne);
  writeln('Students that passed in L03');
  showPass(lectureThree);
end.
```

Fill in the body of procedure "showPass". This procedure takes a parameter of type Lecture as input and it will display all the information about each student in that array that has a passing grade (gpa > 0). You can assume that there are no empty elements in the two arrays.

## Part II: Multiple choice
5. Please refer to the program below in order to determine which of the following statements are true.

```
program scopingExample;
var
     num : integer;
begin
     var num: integer;
end.
```

a. Variable "num" is a global variable.
b. Variable "num" is a local variable for the main program.
c. There are two variables called "num", one is global and the other is local.
d. There is a syntax error in the declaration of variable "num".
e. None of the above

6. Which of the following are accurate descriptions of the area of Human-Computer Interaction?
   a. It's about making computers and technology easier to use.
   b. It's about getting people to use computers more.
   c. It considers human as well technical issues.
   d. (a) & (b)
   e. (a) & (c)

7. Which of the following could be issues of interest to someone in the field of Computer Graphics?
   a. Lighting effects such as reflection and textures.
   b. Using mathematical formulas to produce different types of images.
   c. The current level of ability of computers to render or draw images onscreen.
   d. All of the above could be issues of interest.
   e. None of the above would be issues of interest.

For multiple choice questions 8 – 11 please refer to the following program.

```
program fileIO (output);
begin
  var ch    : char;
  var data : text;

  reset(data, 'data');
  while NOT EOF (data) do
  begin
    read(data, ch);
    write(ch);
    read(data, ch);
    write(ch);
    readln(data, ch);
    write(ch);
  end;
  close(data);
end.
```

And the following versions of the data file called "data.txt":
"**data.txt**" – version 1
The data file is empty

"**data.txt**" – version 2
123<EOL>123<EOL>

"**data.txt**" – version 3
123<EOL>123456<EOL>1

Note: EOL stands for the "end of line" marker.

8.  What will be output of running the program with "data" version 1?
    a.  Nothing will be displayed
    b.  123123
    c.  1231234561
    d.  123<EOL>123456<EOL>1
    e.  1231231./a.out: attempt to read past end of file `data' (error #454 at 11d5b)

9.  What will be output of running the program with "data" version 2?
    a.  Nothing will be displayed
    b.  123123
    c.  1231234561
    d.  123<EOL>123456<EOL>1
    e.  1231231./a.out: attempt to read past end of file `data' (error #454 at 11d5b)

10. What will be output of running the program with "data" version 3?
    a. Nothing will be displayed
    b. 123123
    c. 1231234561
    d. 123<EOL>123456<EOL>1
    e. 1231231./a.out: attempt to read past end of file `data' (error #454 at 11d5b)

11. Which of the following are true of the assignment statement "intPtr^ := 10;"?
    a) It puts the value 10 in an integer variable called 'intPtr'.
    b) It makes the pointer point to memory address ten.
    c) It dereferences a pointer and should store in the dynamically allocated memory the integer ten.
    d) (a) & (b)
    e) None of the above.

 JT: Good luck with real exam!