ITP 168 Midterm Practice Problems

Multiple Choice

For each problem, select one of the answers.

1. Which of the following is an example of content addressing the cell array A?
   a. `A(1,1)`
   b. `A.1`
   c. `A[1]`
   d. `A{1}`

2. Which of the following always determines the number of rows in an array A?
   a. `size(A,1)`
   b. `length(A)`
   c. `numel(A)`
   d. `size(A,2)`

3. To write to a file using spaces as delimiters, which function would be most appropriate to call?
   a. `dlmread()`
   b. `csvwrite()`
   c. `dlmwrite()`
   d. `xlsread()`

4. Which of the following returns false when the value of X is 10?
   a. `X > 5`
   b. `X > 10 && X < 100`
   c. `X < 10 || true`
   d. `~(X > 10)`

5. Which for loop will run exactly 10 iterations?
   a. `for index = 10:1`
   b. `for index = 0:10`
   c. `for index = randi([32,54], 32, 10)`

d. `for index = 10:-2:1`

6. Which of the following is NOT a valid case for a switch statement?

   a. `case 2`

   b. `else`

   c. `case {1, 3}`

   d. `otherwise`

7. What is the first line of comments after the function definition line?

   a. Help line

   b. Header file

   c. Function parameter check

   d. None of the above

8. Which variable refers to the number of input arguments to a function when the function is called?

   a. inArgs

   b. nargout

   c. args_in

   d. nargin

Short Answer

Answer the following questions in the space provided.

1. Using only a single command, delete the second row of cells in the cell array B.

```
B(2,:) = [];
```

2. What does the following line of code produce in the command window:

```
fprintf('The value is: %+010.2f\n', 350.2033)
```

```
The value is: +000350.20
```

3. Using only a single command, open the file “results.txt” and make it writeable, deleting any previous contents.

```
fID = fopen('results.txt','w');
```

4. Create an empty student structure with fields for name, email, and student ID. Replicate it into a 1x5 structure array. Do this using only two commands.

```
student = struct('name', [], 'email', [], 'sID', []);
student = repmat(student, 1,5);
```

5. Write the code to swap the values stored in A and B.

```
temp = A;
A = B;
B = temp;
```

Long Answer

Answer the following questions in the space provided. If the question asks for an example you are required to give one. If it does not, you may use one to help make your point.

1. Compare and contrast a for loop and a while loop. Describe how they are the same and how they are different.

   For loop runs a specified number of times. While loop runs while a condition remains true. Both repeat commands until their end conditions are satisfied.

2. What is the difference between a homogenous collection and a non-homogenous collection? Give an example of each.

   A homogenous collection stores values of the same type. Non-homogenous collections store values of different types. A character vector is a type of homogenous collection. A cell array is a type of non-homogenous collection.

Coding

Write your answers to the questions in the space provided. Points will be awarded for correct implementation of concepts. If your code is not legible, it will not receive points. Do not write comments or a header. You will only receive points for code. You may not use break, continue, or return.

1. Write a script file that asks the user to provide two positive, integer, scalar values. The user needs to enter the two values separately. If they do not provide a positive, integer, scalar value, then ask again. Do this by using only one while loop and one for loop. Each positive, integer, scalar value should be stored in its own separate variable.

```
for ind = 1:2
   loop = true;
   while loop
         in2 = input('Enter a positive, scalar, integer value: ');
         if ~isscalar(in2) || fix(in2) ~= in2 || in2 < 1
               fprintf('Invalid input!\n');
         else
               loop = false;
         end
   end
   if (ind == 1)
         in1 = in2;
   end

end
```

2. Assume the following structure exists:

```
engine =

  struct with fields:

           type:
      cylinders:
   displacement:
          model:
```

   Write a script file that asks the user to name a field to see if it exists in the structure. If the field does exist in the structure, use the disp() function and dynamic field names to display it's value. Do not use fprintf() because the values in the fields are complex. You must use dynamic field names to get full credit.

```
   fieldName = input('Enter field name to check existence: ','s');
   if isfield(engine, fieldName)
```

```
        disp(engine.(fieldName));
    end
```