Written Sample Quiz 03

Duration: 30 minutes

Pages: 4

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1. What is the value assigned to 'val' in the following code?

```
mat1 = [1 2 3; 4 5 6; 7 8 9];

min3 = min(mat1);
min2 = min(mat1, [], 2);
min1 = min(mat1, [], 'all');

val = min3(3) + min2(2) + min1(1);
```

ANSWER	

2. Which of the following best describes the following script?

```
vec = [12 11 2 15 4 17 0 8];

val = sum(vec > 10);
```

(1).   Summing all numbers less than 10 in `vec`
(2).   Summing all numbers greater than 10 in `vec`
(3).   Counting all numbers less than 10 in `vec`
(4).   Counting all numbers greater than 10 in `vec`

ANSWER	

3. What will be the value assigned to 'val' after executing the code below?

```
vec = 1:9;

lg1 = rem(vec, 2) == 1;

val = sum(lg1);
```

ANSWER

4. What is the value at 'val' after running the script below?

```
vec = [4 6 12 3 9 1 2 35 3 17];

lg1 = vec < 10;
lg2 = rem(vec, 2) == 1;

lg = lg1 & lg2;
val = sum(vec(lg));
```

ANSWER

5. What is the value at 'arr_new' after running the script below?

```
arr = [3 0 7 0 2 4 0 8 6 0 1];
lg = arr > 2;
arr_new = [arr(lg) arr(~lg)];
```

ANSWER

6. What is the value at 'mat2d(2,3)' after running the script below?

```
mat = [2 4 2 5; 1 3 2 3; 2 5 6 2; 4 3 4 5];

N = 2;
vec = sum(mat == N, 2);
idx = vec < 2;

mat2d = mat;
mat2d(idx, :) = [];
```

ANSWER

8. (sample) Please answer the following:

```
mat1 = randi([1 50],10,10); % 10x10 matrix with values from 1 to 50

vec1 = randi([1 100],1,100); % 1x100 row vector with values from 1 to 100
```
Do not use loops or condition statements in this problem.

Write a script that:

a) 'is_there_27' which tests if the number 27 is present in 'mat1'. Return true or false.

b) 'mat_b' copied from 'mat1'. Then every element between 10 and 30 (exclusive) becomes 100.

c) 'min_product_pair' which contains the minimum **product** of pairs (adjacent numbers). Let's assume that we are multiplying two numbers in 'vec1' in turn (without overlap) in order.

For example, when vec1 = [1 2 4 5 4 2], the product of pairs becomes [2 20 8]. Thus, 2 is assigned to 'min_product_pair'.

- 2 = 1 x 2
- 20 = 4 x 5
- 8 = 4 x 2

Since 'vec1' is a 1x 100 vector, 50 pairs and their products should be generated. Assign the minimum product value to 'min_product_pair'.

d) Counts the number of elements in 'vec1' with values greater than 60 (exclusive) and assigns this value to 'num_over_60'.

The code below represents the model answer for the given question. However, there are some errors in the code. Please identify which solution(s) among options a) to d) are incorrect.

```
1
2    mat1 = randi([1 50],10,10); % 10x10 matrix
3
4    vec1 = randi([1 100],1,100); % 1x100 row vector
5
6    % Start your script here
7
8    % a)
9    is_there_27 = all(mat1(:) == 27);
10
11   % b)
12   mat_b = mat1;
13   lg_vec = mat_b > 10 | mat_b < 30;
14   mat_b(lg_vec) = 100;
15
16   % c)
17   prod_pairs = vec1(1:2:end) .* vec1(2:2:end);
18   min_product_pair = min(prod_pairs);
19
20   % d)
21   num_over_60 = sum(vec1 > 60);
```

ANSWER	

9. (sample) This is the script to count the number of 'apple' in the 'word_seq'. However, we need to complete the line 10 to compute 'cond'. Please **select all correct** implementation for computing 'cond'.

```
1
2    num_app = 0;
3
4    nseq = numel(word_seq);
5    ntest = 5;
6
7    for ii=1:nseq-ntest+1
8        test_loc = ii:ii+ntest-1;
9
10       % (TODO) need a line for computing cond
11       if cond
12           num_app = num_app + 1;
13       end
14   end
```

(a)	`cond = sum(word_seq(test_loc) == 'apple') == 5`
(b)	`cond = all(word_seq(test_loc) == 'apple')`
(c)	`cond = any(word_seq(test_loc) == 'apple')`

ANSWER	