

Midterm Exam

10/07/2016

version: 684965

Name:_____

Student ID:_____

UC Berkeley Honor Code: “As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others.”

On my honor, I have neither given nor received any assistance in the taking of this exam.

Instructions:

1. First make sure the **version number** on the question sheet and that on the bubble sheet are exactly same (Bubble sheet is the last page). For convenience, you may separate the bubble sheet from the question sheet, return both after the exam.
2. Write your full name and Student ID on the question sheet
3. Write your full name on the front of the bubble sheet
4. If your student ID number has 8 digits, start with the left box and bubble then in (leaving the right two boxes blank). If your student ID number has 10 digits, just use all boxes
5. Record your answers on the bubble sheet (use pencil). There is one correct answer for each question. Multiple bubbles, incomplete bubbles, or stray marks will be marked incorrect.
6. You may use one 8.5” by 11” cheat sheet(both sides) for this exam provided you do not disturb those sitting nearby.
7. No electronic devices are permitted in your work area.
8. There will be no questions regarding the exam during the examination time except in cases where there is a missing page or printing problem with your exam.

1. What is the output of executing the following code?

```
C= 'This is a sentence.';
strfind(C, 'is')
```

- (a) []
 - (b) 3
 - (c) 6
 - (d) [1,2]
 - (e) [3,6]
-

2. What is the value of k after executing the following code?

```
k = 0;
while k^0.5 >= k
    k = k + 1;
end
k
```

- (a) 0
- (b) 1
- (c) 2
- (d) 3
- (e) MATLAB returns an error

3. What is the output when executing the following MATLAB code?

```
sum = 0;
for i=1:2:6
    sum = sum+i;
end
i
```

- (a) 1,3,5
 - (b) 1,2,3,4,5,6
 - (c) 5
 - (d) 6
 - (e) Undefined function or variable 'i'.
-

4. What is the output of executing the following MATLAB code?

```
g = @(x) x - 5;
x(1) = 0;
for i = 1:1:7
    t = g(x(i));
    x(i + 1) = x(i) + 1;
end
t
```

- (a) -2
- (b) -1
- (c) 0
- (d) 1
- (e) 2

5. Given function `myFunc1` defined below.

```
function [ E ] = myFunc1( A, B, C )
if ( A == B && C == D)
    E = A;
else
    E = C;
end
end
```

Which of the following function calls would cause an error?

- (a) `myFunc1(1,2,3)`
 - (b) `myFunc1(2,4,4)`
 - (c) `myFunc1(4,4,3)`
 - (d) all of the above
 - (e) none of the above
-

6. Given function `mainfun` defined below with `localsubfun` as its local function

```
function mainfun
    i = 1;
    i = localsubfun(i);
end

function [i] = localsubfun(i)
    i = i +1;
end
```

Which of the following will be true if you execute the following code

```
mainfun
```

- (a) There is nothing showing up in the command window
- (b) There is nothing showing up in the workspace
- (c) `i = 2` shows in the command window
- (d) Both (A) and (B) are correct
- (e) MATLAB returns an error

7. If A is defined to be:

```
A = {'MATLAB IS COOL', [1 2; 3 4; 5 6]; [true, false], ones(2,2)};
```

What is the class of A(3)?

- (a) double
 - (b) char
 - (c) cell
 - (d) integer
 - (e) logical
-

8. What is the value of a after executing the following code?

```
mystr = struct('name', {'square', 'double'}, 'handle', {@(x) x^2, @(y) 2*y});  
x=1:4;  
try  
    a=sum(mystr(1).handle(x)+mystr(2).handle(x));  
catch  
    a=sum(mystr(2).handle(x));  
end
```

- (a) 50
- (b) 20
- (c) undefined
- (d) empty
- (e) 10

9. After executing the following code, what is the value of B2?

```
A0 = [4 0 9; 2 5 3];  
A1 = A0([1,5,6,4]);  
A2 = [5 9 3 7];  
B1 = A1 < A2 | A1 == 4;  
B2 = B1 & A1 >= A1(1)
```

- (a) [1 1 0 1]
 - (b) [1 0 0 1]
 - (c) [0 0 0 0]
 - (d) 1
 - (e) MATLAB returns an error
-

10. What will be the value of `position` after executing the following code?

```
name = 'Zaza';  
  
switch upper(name)  
    case 'STEPH'  
        position = 'point guard';  
    case 'KLAY'  
        position = 'shooting guard';  
    case 'DRAYMOND'  
        position = 'power forward';  
    case 'KEVIN'  
        position = 'small forward';  
    case 'ZAZA'  
        position = 'center';  
    otherwise  
        position = '';  
end
```

- (a) 'point guard'
- (b) 'small forward'
- (c) 'center'
- (d) ''
- (e) MATLAB retruns an error

11. Given function `myfun` defined to be

```
function [sum, rangeratio] = myfun(a,b,c,d,e)
sum = a + b + c + d + e;
vect = [a,b,c,d,e];
minv = min(vect);
maxv = max(vect);
rangeratio = minv/maxv;
end
```

Which of the following is true if you execute following code

```
sum = myfun(1,2,3,4,5);
min = 1;
```

- (a) `sum = 15`
 - (b) `sum` is not 15 because it is a function handle and MATLAB returns an error
 - (c) `min` is not equal to 1
 - (d) `rangeratio = 0.2`
 - (e) more than one of above options are correct
-

12. What is the value of `a` after executing the following code?

```
A={'James Bond', [1 2; 3 4; 5 6]; 3.1415, zeros(2,2)};
a = A{1,2}(3)
```

- (a) 3.1415
- (b) m
- (c) 5
- (d) 0
- (e) []

13. What is the value of `b` if you execute the following code, given that the ASCII code for character 'A' is 65?

```
A = [1 3; 7.1 9];  
B = {'hello' 55; 'A' A};  
b = B{1,2}+A(1,2)+B{2,1}
```

- (a) 55
 - (b) 61
 - (c) 123
 - (d) 120
 - (e) MATLAB returns an error.
-

14. Tim, Ann and Mike are in the same study group. They have taken three exams so far this semester. Their scores are stored in a structure array 'student'.

```
student = struct('name',{'Tim','Ann','Mike'},'scores',[9 3 6],[3 3 6],[12 3 9])
```

What is average score of the study group in the second exam?

- (a) 8
- (b) 3
- (c) 7
- (d) 4
- (e) 6

15. Given function `trace` defined below

note: `ones` is a built-in function. `ones(n)` returns a `n` by `n` matrix with components of 1.

```
function a = trace(A)
    [lengthx,lengthy] = size(A);
    a = 0;
    for i = 1: lengthx
        a = a + A(i,i);
    end
end
```

What is the value of `a` if you execute the following code

```
A = ones(15)*2;
a = trace(A)
```

- (a) `a = 15`
- (b) `a = 30`
- (c) `a = 60`
- (d) MATLAB returns an error
- (e) None of above options are correct

16. After executing the following code, what is the value of `D`?

```
A = [1 0 1];
B = [0 1 1];

C = A & B;
D = B | C;
```

- (a) 0
- (b) 1
- (c) [1 0 1]
- (d) [0 0 1]
- (e) [0 1 1]

17. What is the output of executing the following code?

```
A= [3 9 3 3; 5 5 8 9; 7 2 3 4; 9 2 8 2];  
A([1,4],[3:-2:1])
```

- (a) [3,3]
 - (b) [9,7]
 - (c) [3 9; 3 8]
 - (d) [3 3; 8 9]
 - (e) MATLAB returns an error
-

18. What is the output of executing the following code?

```
A= [3 4 5; 6 8 9; 5 6 3];  
B= [5 4 4; 5 1 5; 3 1 6];  
A(B>=4)=3
```

- (a) 3
- (b) [3 4 5; 6 8 9; 5 6 3]
- (c) [3 4 3; 3 3 3; 3 3 3]
- (d) [3 3 3; 3 8 3; 5 6 3]
- (e) MATLAB returns an error

Given function `myifs` defined below, answer the next 2 questions.

```
function out = myifs(in1, in2)

if in1==in2
    out = in1/2;
elseif in1 > 3
    out = 14;
elseif in2 < -4
    out = -2*in2;
elseif in1 < in2
    out = 3;
end
```

19. What is the value of `a` after executing the following command?

```
a = myifs(-6,-5)
```

- (a) 1
- (b) 3
- (c) 10
- (d) 14
- (e) MATLAB returns an error

20. What is the value of `a` after executing the following command?

```
a = myifs(3,2)
```

- (a) 1
- (b) 3
- (c) 10
- (d) 14
- (e) MATLAB returns an error

21. What is the output of executing the following MATLAB code?

```
clear;
for i = 1:5
    for j = 1:5
        M(i,j) = i + j;
        M(j,i) = M(i,j);
    end
end
M(4,3)
```

- (a) 6
 - (b) 7
 - (c) 8
 - (d) 9
 - (e) 10
-

22. What is the value of A after executing the following code?

```
index = 0;
for count = 3:-1:1
    index = index + 1;
    A(1,index) = count;
end
```

- (a) $A = [1; 2; 3]$
- (b) $A = [3; 2; 1]$
- (c) $A = [1, 2, 3]$
- (d) $A = [3, 2, 1]$
- (e) $A = 6$

23. Given function `mainfun` defined below with `localsubfun` as its local function

```
function j = mainfun
    j = 1;
    localsubfun(j);
    localsubfun(j);
end

function [i] = localsubfun(i)
    i = i + 1;
end
```

Which of the following will be true if you execute the following code

```
j = mainfun
```

- (a) There is nothing showing up in the command window
- (b) `j = 1` shows in the workspace
- (c) `j = 2` shows in the command window
- (d) MATLAB returns an error
- (e) None of above options are correct

24. What is the value of `b` after executing the following code?

```
a = 1; b = 2;
fh = @(a,b) a + b/2 + 3;
a = 2; b = -1;
b = fh(b, a);
```

- (a) 5.5
- (b) 5
- (c) 4.5
- (d) 3
- (e) -1

25. What is the output of executing the following MATLAB code?

```
i = 0;  
while i <= 10  
    j = i*3;  
    i = j+1;  
end  
j
```

- (a) 0
- (b) 3
- (c) 6
- (d) 9
- (e) 12

First Name
Last Name
Course Name E7: Midterm1
Date
Version 684965

Student Number

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Marking Instructions
Completely fill in the appropriate bubble.

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