

# EECS 10: Computational Methods in Electrical and Computer Engineering

## Quiz on Lectures 19-25

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### Quiz: Question 1

Midterm 2 Question 1:  
40% incorrect answers

- Which property is *required* for an algorithm?  
(Check all that apply!)
  - a) An algorithm must be fast.
  - b) An algorithm must terminate after a finite number of steps.
  - c) An algorithm must be efficient.
  - d) An algorithm must be indeterministic.
  - e) An algorithm must be formally written in the C programming language.

## Quiz: Question 1

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## Quiz: Question 2

Midterm 2 Question 5:  
80% incorrect answers

- In the program below, what is the result of calling `grade(85)`?

- a) 'A'
- b) 'B'
- c) 'C'
- d) 'D'
- e) 'F'

```
1 char grade(int x)
2 { char g;
3   if (x >= 90)
4     { g = 'A'; }
5   if (x >= 80)
6     { g = 'B'; }
7   if (x >= 70)
8     { g = 'C'; }
9   if (x >= 60)
10    { g = 'D'; }
11  else
12    { g = 'F'; }
13  return g;
14 }
```

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## Quiz: Question 2

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- a) 'A'
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```
1 char grade(int x)
2 { char g;
3   if (x >= 90)
4     { g = 'A'; }
5   if (x >= 80)
6     { g = 'B'; }
7   if (x >= 70)
8     { g = 'C'; }
9   if (x >= 60)
10    { g = 'D'; }
11  else
12    { g = 'F'; }
13  return g;
14 }
```

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## Quiz: Question 3

Midterm 2 Question 13:  
55% incorrect answers

- In the program below, what is printed by the function call `g(1)`?

- a) 1 2
- b) 2 3
- c) 1 1
- d) 2
- e) 1

```
1 int f(int x)
2 { printf("%d ", x);
3   return x + 1;
4 }
5 int g(int x)
6 { printf("%d ", f(x));
7   return x + 2;
8 }
```

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7   return x + 2;
8 }

```

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### Quiz: Question 4

Midterm 2 Question 15:  
60% incorrect answers

- In the program below, what is printed when the program is executed?

- a) 11 6 6
- b) 12 6 6
- c) 10 5 6
- d) 11 5 6
- e) 12 5 6

```

1 int x = 5, y = 6;
2 int f(int x, int y)
3 { x = y;
4   return x + y;
5 }
6 int main(void)
7 { printf("%d %d %d",
8     f(x,y), x, y);
9 }

```

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## Quiz: Question 4

Midterm 2 Question 15:  
60% incorrect answers

- In the program below, what is printed when the program is executed?

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- b) 12 6 6
- c) 10 5 6
- d) 11 5 6
- e) 12 5 6

```

1 int x = 5, y = 6;
2 int f(int x, int y)
3 {   x = y;
4     return x + y;
5 }
6 int main(void)
7 {   printf("%d %d %d",
8         f(x,y), x, y);
9 }
```

## Quiz: Question 5

Midterm 2 Question 16:  
65% incorrect answers

- Which of the following are correct definitions of an array of four characters that is initialized with the first three letters of the alphabet? (Check all that apply!)

- a) `char s[4] = {'A', 'B', 'C'};`
- b) `char s[] = "ABC";`
- c) `char s[] = 'ABC';`
- d) `char s[4] = {"A", "B", "C"};`
- e) `char s[3] = {'A', 'B', 'C'};`

## Quiz: Question 5

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- b) `char s[] = "ABC";`
- c) `char s[] = 'ABC';`
- d) `char s[4] = {"A", "B", "C"};`
- e) `char s[3] = {'A', 'B', 'C'};`

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## Quiz: Question 6

- What is recursion? (Check all that apply!)
- a) A function that does not terminate.
- b) A function that calls itself.
- c) A function declaration within a function definition.
- d) A function  $f$  that calls a function  $g$  which calls  $f$ .
- e) A function that returns no value.

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## Quiz: Question 6

- What is recursion?  
(Check all that apply!)
  - a) A function that does not terminate.
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  - e) A function that returns no value.

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## Quiz: Question 7

- Given the function definition below, what is printed for the function call  $f(4)$ ?

- a) 1 2 3 4
- b) 1 2 3
- c) 4 3 2 1 0
- d) 4 3 2 1
- e) 3 2 1

```

1 void f(int x)
2 {
3     printf("%d ", x);
4     if (x > 0)
5         { f(x-1); }
6 }
```


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## Quiz: Question 7

- Given the function definition below, what is printed for the function call  $f(4)$ ?

- a) 1 2 3 4  
 b) 1 2 3  
 c) 4 3 2 1 0  
 d) 4 3 2 1  
 e) 3 2 1

```

1 void f(int x)
2 {
3     printf("%d ", x);
4     if (x > 0)
5         { f(x-1); }
6 }
```

## Quiz: Question 8

- Given the following definition of the vectors  $v_1$ ,  $v_2$  and  $v_3$ , what is a correct way to perform a vector addition of  $v_1$  and  $v_2$ ?

```
struct v {int x, y;} v1, v2, v3;
```


- a)  $v_3 = v_1 + v_2;$   
 b)  $v_3[0] = v_1[0] + v_2[0];$   
 $v_3[1] = v_1[1] + v_2[1];$   
 c)  $v_3.x = v_1.x + v_2.x;$   
 $v_3.y = v_1.y + v_2.y;$   
 d)  $v_3 = v_1[x]*v_2[y] + v_1[y]*v_2[x]$   
 e)  $v_3->x = v_1->x + v_2->x;$   
 $v_3->y = v_1->y + v_2->y;$



## Quiz: Question 8

- Given the following definition of the vectors **v1**, **v2** and **v3**, what is a correct way to perform a vector addition of **v1** and **v2**?

```
struct v {int x, y;} v1, v2, v3;
```

- a) `v3 = v1 + v2;`
- b) `v3[0] = v1[0] + v2[0];`  
`v3[1] = v1[1] + v2[1];`
-  c) `v3.x = v1.x + v2.x;`  
`v3.y = v1.y + v2.y;`
- d) `v3 = v1[x]*v2[y] + v1[y]*v2[x]`
- e) `v3->x = v1->x + v2->x;`  
`v3->y = v1->y + v2->y;`

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## Quiz: Question 9

- Given the following enumerator definition, what is printed by `printf("%d", two);`?

```
enum count {one, two, three, four = 5};
```

- a) `one`
- b) `two`
- c) `0`
- d) `1`
- e) `2`

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## Quiz: Question 9

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```
enum count {one, two, three, four = 5};
```

- a) one
- b) two
- c) 0
-  d) 1
- e) 2

## Quiz: Question 10

- Which of the following components do you find in every computer?  
(Check all that apply!)

- a) **RAM**
- b) **BUG**
- c) **ROM**
- d) **CPU**
- e) **IBM**

## Quiz: Question 10

- Which of the following components do you find in every computer?  
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## Quiz: Question 11


- What is the decimal value of the (unsigned) binary number  $10101010_2$  ?

- a) **10101010**
- b) **170**
- c) **85**
- d) **101**
- e) **255**

### Quiz: Question 11

- What is the decimal value of the (unsigned) binary number  $10101010_2$  ?

a) 10101010

 b) 170

c) 85

d) 101

e) 255

### Quiz: Question 12

- What is the binary value of the hexadecimal number  $1F_{16}$  ?

a) 01010101


b) 10010000

c) 01111111

d) 00011111

e) 10001111

## Quiz: Question 12

- What is the binary value of the hexadecimal number  $1F_{16}$  ?
  - a) 01010101
  - b) 10010000
  - c) 01111111
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## Quiz: Question 13

- What could cause a **bus error**?  
(Check all that apply!)
  - a) Waking up late and missing the bus.
  - b) Calling a recursive function.
  - c) Accessing an array with an index out of range.
  - d) Accessing an pointer variable with invalid value.
  - e) Accessing an integer variable with invalid value.

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### Quiz: Question 14

- In a C program, which properties does every object have?  
(Check all that apply!)
  - a) A size.
  - b) A value.
  - c) A color.
  - d) A type.
  - e) A location.

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## Quiz: Question 15

- Given the program segment below, what is the value of `*p` at the end?

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5

```
1 int x[] = {1,2,3,4,5};
2 int *p = &x[2];
3
4 p++;
5 p -= 2;
6
```

## Quiz: Question 15

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```

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## Quiz: Question 16

- Given the function and variable definitions shown below, which function call is valid? (Check all that apply!)

- a) `StrLen(cp);`
- b) `StrLen(ca);`
- c) `StrLen(c);`
- d) `StrLen(i);`
- e) `StrLen("abc");`

```

1 int StrLen(char *s)
2 { int l = 0;
3
4   while(*s)
5     { s++;
6       l++;
7     }
8   return l;
9 }
10 char *cp = "cp";
11 char ca[] = "cp";
12 char c = 'c';
13 int i = 42;

```



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10 char *cp = "cp";
11 char ca[] = "cp";
12 char c = 'c';
13 int i = 42;

```

## Quiz: Question 17

- Which of the following are functions declared in `stdio.h`? (Check all that apply!)

- a) `printf`
- b) `printfd`
- c) `fprintf`
- d) `sprintf`
- e) `fputs`

## Quiz: Question 17

- Which of the following are functions declared in `stdio.h`?  
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- c) `fprintf`
- d) `sprintf`
- e) `fputs`