EECS 10: Computational Methods in Electrical and Computer Engineering

Quiz on Lectures 19-25

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Midterm 2 Review Quiz

- Top 5 most “difficult” questions:
  - Rank 1: Question 6 (70.8% incorrect answers)
- In the program below, what is the result of calling **`grade(75)`**?

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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Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 2: Question 16 (55.5% incorrect answers)
- Which of the following are valid declarations of an integer array **`A`** of size 3? (Check all that apply!)

a) **`int A[3];`**
b) **`int A[3] = {1,2,3};`**
c) **`int A[3] = {};`**
d) **`int A[3] = {1, 2};`**
e) **`int A[] = {1,2,3};`**

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Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 3: Question 14 (54.8% incorrect answers)
- Given two global variables **`int x=7`** and **`int y=8`**, which of the following functions properly swaps the values such that **x=8** and **y=7**?
  (Check all that apply!)

a)
```
void swap(int x, int y)
{ x = y; y = x;
}
```

b)
```
void swap(void)
{ x = y; y = x;
}
```

c)
```
void swap(void)
{ int t;
  t = x; x = y; y = t;
}
```

d)
```
void swap(void)
{ int t;
  t = y; y = x; x = t;
}
```

e)
```
void swap(int x, int y)
{ int t;
  t = x; x = y; y = t;
}
```

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void swap(void)
{ int t;
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}
```

d)
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void swap(void)
{ int t;
  t = y; y = x; x = t;
}
```

e)
```
void swap(int x, int y)
{ int t;
  t = x; x = y; y = t;
}
```


Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 4: Question 7 (48.4% incorrect answers)
- In the program below, what is the result of calling **`grade(80-90)`**?

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'; }
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12     { g = 'F'; }
13   return g;
14 }
```


Midterm 2 Review Quiz

- Top 5 most "difficult" questions:
  - Rank 5: Question 4 (41.3% incorrect answers)
- In the **gdb** debugger, which commands allow you to run your program step by step? (Check all that apply! 2 pts.)

a) **`step`**
b) **`cont`**
c) **`run`**
d) **`next`**
e) **`back`**

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a) **`step`**
b) **`cont`**
c) **`run`**
d) **`next`**
e) **`back`**

Quiz: Question 1

- 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 }
```

Quiz: Question 1

- 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 }
```


Quiz: Question 2

- What is recursion?
  (Check all that apply!)

a) A function that does not terminate.
b) A function that calls itself.
c) A function that contains a loop.
d) A function **`f`** that calls a function **`g`** which calls **`f`**.
e) A function that returns no value.

Quiz: Question 2

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e) A function that returns no value.

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Quiz: Question 3

- Given the function definition below, what is printed for the function call **f(3)**?

a) **1 2 3**
b) **1 2 3 4**
c) **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 3

- Given the function definition below, what is printed for the function call **`f(3)`**?

a) 1 2 3
b) 1 2 3 4
c) **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 4

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

Quiz: Question 4

- 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 = v1[x]*v2[y] + v1[y]*v2[x]
```

c)
```
v3[0] = v1[0] + v2[0];
v3[1] = v1[1] + v2[1];
```

d)
```
v3.x = v1.x + v2.x;
v3.y = v1.y + v2.y;
```

e)
```
v3->x = v1->x + v2->x;
v3->y = v1->y + v2->y;
```


Quiz: Question 5

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

```
enum count {one, two, three, four = 4};
```

a) **one**
b) **two**
c) **three**
d) **1**
e) **2**

Quiz: Question 5

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

```
enum count {one, two, three, four = 4};
```

a) **`one`**
b) **`two`**
c) **`three`**
d) **`1`**
e) **`2`**

Quiz: Question 6

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

a) **`ROM`**
b) **`RUM`**
c) **`BUG`**
d) **`CPU`**
e) **`IBM`**

Quiz: Question 6

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

a) **ROM**
b) **RUM**
c) **BUG**
d) **CPU**
e) **IBM**

Quiz: Question 7

- What is the decimal value of the (unsigned) binary number 01010101_2 ?

a) **01010101**
b) **85**
c) **101**
d) **170**
e) **255**

Quiz: Question 7

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a) **01010101**
b) **85**
c) **101**
d) **170**
e) **255**

Quiz: Question 8

- What is the binary value of the hexadecimal number FF_{16} ?

a) **01010101**
b) **10001000**
c) **01110111**
d) **00010001**
e) **11111111**

Quiz: Question 8

- What is the binary value of the hexadecimal number FF_{16} ?

a) `01010101`
b) `10001000`
c) `01110111`
d) `00010001`
e) **`11111111`**

Quiz: Question 9

- How many bits do you need to represent one hexadecimal digit?

a) 1
b) 2
c) 4
d) 8
e) 16

Quiz: Question 9

- How many bits do you need to represent one hexadecimal digit?

a) 1
b) 2
c) 4
d) 8
e) 16

Quiz: Question 10

- 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) Referencing a pointer variable with invalid value.
e) Accessing an integer variable with invalid value.

Quiz: Question 10

- What could cause a **`bus error`**? (Check all that apply!)

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c) Accessing an array with an index out of range.
d) Referencing a pointer variable with invalid value.
e) Accessing an integer variable with invalid value.

Quiz: Question 11

- In C, which properties does every object have? (Check all that apply!)

a) A size.
b) A value.
c) A weight.
d) A type.
e) A location.

Quiz: Question 11

- In C, which properties does every object have?
  (Check all that apply!)

a) A size.
b) A value.
c) A weight.
d) A type.
e) A location.

Quiz: Question 12

- 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;
```

Quiz: Question 12

- 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;
```


Quiz: Question 13

- 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  = "hello";
11 char ca[] = "world";
12 char c = 'c';
13 int  i = 42;
```

Quiz: Question 13

- 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  = "hello";
11 char ca[] = "world";
12 char c = 'c';
13 int  i = 42;
```

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Quiz: Question 14

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

a) **`printf`**
b) **`printd`**
c) **`fprintf`**
d) **`sprint`**
e) **`fputs`**

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Quiz: Question 15

- What does the following code segment print?

```
1 char s[] = "Hppe!Mvdl!boe!Ibqqz!Ipmjebzt";
2 char *p;
3 p = &s[0];
4 while(*p)
5 { printf("%c", *p - 1);
6   p++;
7 }
```

a) **`Hppe!Mvdl!boe!Ibqqz!Ipmjebzt`**
b) **`Happy Holidays and Good Luck`**
c) **`Happy Luck and Good Holidays`**
d) **`Good Holidays and Happy Luck`**
e) **`Good Luck and Happy Holidays`**

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Quiz: Question 15

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