CS 241 Data Organization Quiz 2

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Question 1: Syntax

Which of these statements would result in an error?

```
A int a = 40 * 2*(1 + 3);

B int b = (10 * 10 * 10) + 2

C int c = (2 + 3) * (2 + 3);

D int d = 1/2 + 1/3 + 1/4 + 1/5 + 1/6;

E int e = 1/2 - 1/4 + 1/8 - 1/16;
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Question 2: '=' symbol

In the C programming language, the '=' symbol is most accurately read:

- A "Equals"
- B "Assign the value of the expression on the right side to the variable on the left"
- C "Is equivalent to"
- D "A mathematical symbol used to indicate equality"
- E "A conditional symbol used to indicate equality"

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Question 3: Alphabet char

```
char c = getchar();
```

Which is true *if and only* if c is a letter in the standard English alphabet?

```
A ((c>='a'&& c<='z') && (c>='A'&& c<='Z'))

B ((c>='a'&& c<='z') || (c>='A'&& c<='Z'))

C ((c>='a'|| c<='z') || (c>='A'|| c<='Z'))

D ((c>='a'|| c<='z') && (c>='A'|| c<='Z'))

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Question 4: Call by value

In the C Programming Language, *call by value* means:

- A When two functions have the same name, the compiler determines which to call by the value of the arguments.
- B The called function is given the address of its arguments so that the function can both read and set the arguments values.
- C Each called function is assigned a value that is used by the operating system to determine the functions priority. This is most useful on multi-core systems.
- D The called function is given the values of its arguments which are copied into temporary variables.



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Question 5: Automatic variable

In the C Programming Language, an *automatic* variable is:

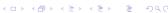
- A A local variable in a function which comes into existence at the time the function is called, and disappears when the function is exited.
- B A variable that is automatically initialized.
- C A global variable that is automatically available to all functions within the source file.
- D A global variable that is available to all functions within any source file that declare the variable as extern.
- E A variable that is automatically defined by the compiler such as PI, E, and HBAR.



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Question 6: if, else if, else

```
What is the output of this
int main(void)
{
                          code?
  int x = 4;
                          A \times is 1
                          B \times is 2
  if (x == 1)
                          C \times is 3
   printf("x is 1\n");
                          D x is 4
  else if (x == 2)
                          E Nothing is printed.
   printf("x is 2 n");
  else x = 3;
   printf("x is %d\n", x);
```

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  else if (x == 2)
   printf("x is 2\n");
  else x = 3;
   printf("x is %d\n", x);
```

Question 7: Flag

What is the output of this

```
code?
int main(void)
                         A 10 9 8 7 6 5 4 3 2
{
 int i, n;
                         B 9 8 7 6 5 4 3
  int flag;
 for (n=10; n>1; n--) ( 9 7 5 3
                         D 7 5 3 2
    flag = 0;
    for (i=2; i<n; i++)</pre>
      if(n \% i == 0) flag = 1;
    if (flag == 0) printf("%d ", n);
 printf("\n");
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```

Aside: Flag

- In computer programming, flag often refers to a variable or bit used to indicate a particular property is "on" or "off".
- Generally a good idea to use a more meaningful name than "flag", though.

Aside: More efficient printer of primes

```
int main(void)
{
  int i, n;
  int flag;
  for (n=10; n>1; n--)
    flag = 0;
    for (i=2; i<n; i++)</pre>
      if(n \% i == 0)
        flag = 1;
        break;
    if (flag == 0) printf("%d ", n);
```

printf("\n");

Once a factor of n is found, n cannot be prime, so break out of inner loop.

Question 8: Functions

This code will not compile because:

```
int foo(float x);
2
3
   void main(void)
4
5
      int n=5;
      printf("%d\n", foo(n));
6
7
8
9
   int foo(int n)
10
11
      return 2*n;
12
```

- A The version of foo in line 1 accepts a float, but returns an int.
- B The function foo in line 1 has no body.
- C The version of foo in line 1 should not end with a semicolon.
- D The variable n is declared in two different places.
- E The prototype of foo does not agree with the definition.

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