CS120 Practice Midterm

1. Is each a C keyword or not?
   If Yes, then explain what is the usage of the keyword. If No, then explain why not (or how to change it to make it become a keyword).

   (a) IF Y N

   Explanation: _____

   (b) double Y N

   Explanation: _____

   (c) main Y N

   Explanation: _____

   (d) For Y N

   Explanation: _____

   (e) while Y N

   Explanation: _____

   (f) integer Y N

   Explanation: _____

2. Is each a legal identifier or not?
   If Yes, the write VALID. If No, then explain why not.

   (a) identifier Y N

   Explanation: _____

   (b) $again Y N

   Explanation: _____

   (c) get-integer Y N

   Explanation: _____

   (d) 99ballons Y N

   Explanation: _____

   (e) catch22 Y N

   Explanation: _____

   (f) #define Y N

   Explanation: _____

3. Answer the questions about the following statement:
```
scanf("Please enter your height and weight: %f %f", &height, &weight);
```

   (a) How many total tokens? _____

   (b) How many of the tokens are identifiers? _____

   (c) How many of the tokens are punctuation? _____

4. What does the following print? Make sure to pay attention to all characters printed.

   (a) `printf("|-%-4.2d-_%5.2f_|", 7, 10.54731296);`

   (b) `printf("|-%11.4e-|", 0.0027120);`

5. Provide the format specifier given the provided output:
   (For the sake of this question, consider ANY '-' as spaces and do not manually place the zeros and spaces, and pay attention to the '|').

   (a) `|-----42|` printf("_____", 42);

   (b) `|10.54124|` printf("_____", 10.5412365);

   (c) `|000093,39----|` printf("_____", 93, 39);

6. Answer the questions about the following statement:
```
int one, five;
float two, four;
char three;
scanf("%d%f%c%f%d", &one, &two, &three, &four, &five);
```

   If the user enters: "`15.65 40 c 10 2`" and the presses enter, what is the value of variable:

   (a) one _____

   (b) two _____

   (c) three _____

   (d) four _____

   (e) five _____

7. Given the following expressions, add parenthesis to indicate how the C compiler interprets it:

(a) `a * - b ++ * + -- c * d * e * f + g / h`
(b) `a * + b % c / d - - e + f ++ - -- g`
(c) `a = b += c ++ - d + -- e / - f`
(d) `a /= + b % - c / d + - e`

8. Given the following code:

```
#include <stdio.h>

int MAIN(void)

  int a, b, c;
  a = b + 10;
  printf("a is %d\n, a);
  printf("b is %f\n", b);
}
```

If you compile using:

```
gcc –Wall –Werror –Wextra –ansi –pedantic -c code.c –o code.o
```

(a) What are the (5) compiler errors?

_____

_____

_____

_____

_____

After all these errors are removed, if you link using:

```
gcc code.o –o code.exe
```

(b) What is the (1) linker error ? _____

9. What is the output produced by the following code snippets?

(a)
```
int i = 10, j = 4;
printf("%d ", i++ - 10 || --j);
printf("%d %d", ++i, j++);
```
_____

(b)
```
int i = 4, j = 5, k = 6;
printf("%d ", i – 4 && ++j && ++k);
printf("%d %d %d", i, j, k);
```
_____

10. What does the following code snippets print? (If nothing is printed, write NOTHING)

(a)
```
int x = 14;
if (x > 10)
  if (x >= 15)
    printf("Number is greater or equal than 15.");
else
  printf("Number is less or equal than 10.");
```

Output: _____

(b)
```
int i = 10;
```

```
if (i == 10)
    int i = 14;
printf("i = %d", i);
```

Output: _____

(c)
```
int i = 5;
switch(5 % 4)
{
    case 0: printf("zero");
    case 1: printf("one");
    case 2: printf("two");
    case 3: printf("three");
}
```

Output: _____

(d)
```
int i;
for (i = 10; i >=0; --i);
    printf("%d ", i);
```

Output: _____

(e)
```
int i, j;
for (i = 5, j = 8 + i; i >= -1, j < 14; --i || j++)
    printf("%d %d, ", i, j);
```

Output: _____

(f)
```
int i, sum = 0;
for (i = 0; i < 10; ++i)
{
     if (i % 2) continue;
     sum += i * 3;
}
printf("sum = %d", sum);
```

Output: _____

11. Rewrite the following while loop into a for loop:
(Hint: Print out the numbers to see what your new loop will output.)

```
int i = 0;
while(++i <= 5)
{
    printf("%d ", i);
}
```

12. Write the prototype (declaration) of a function called fnc that takes as parameters 3 integers, a character, and a single-precision floating point, and returns a short integer.

13. Write a function that calculates the least common multiple (or LCM) of the integers A and B.
As a refresher, the least common multiple is the smallest positive integer that is a multiple of both A and B. For example, the LCM of 6 and 8 is 24 since:
Multiples of 6 are: 6, 12, 18, 24, 30, 36...
Multiples of 8 are: 8, 16, 24, 32, 40, 48...