Solutions to End of Chapter 2 Problems

Problem 1: (a) How many users have accounts on your Linux system? What are their names?

9 users: coordinator, instructor, joe, ken, mia, midshipman, professor, rob, root

(b) How many items (directories and files) are immediately under the root directory?

23 items.

Problem 2:

How many total bytes would be needed to store the following variables?

- `int time_1, time_2, time_3;`  
  \[3 \text{ variables} \times 4 \text{ bytes/variable} = 12 \text{ bytes}\]

- `float PRT1 = 9.5, PRT2 = 8.7;`  
  \[2 \text{ variables} \times 4 \text{ bytes/variable} = 8 \text{ bytes}\]

- `char mid_1, mid_2;`  
  \[2 \text{ variables} \times 1 \text{ byte/variable} = 2 \text{ bytes}\]

22 bytes

Problem 3:

Determine the error contained in the program shown below.

```c
#include <stdio.h>
int main( )
{
  int favoriteNumber = 2017;
  printf("My number is %d \n", favorite_Number);
}
```

The variable names on lines 4 and 5 do not match (favoriteNumber vs. favorite_Number).
Problem 4:

For each of the following questions select the answer that best identifies the type of computing code being described from the choices (high-level code)  (assembly code)  (machine code)  (honor code)

(a) Code resulting from a successful compilation of a C program's source code.  
(b) Code used when we write programs in the C programming language.  
(c) This code uses English-like mnemonics which correspond to machine instructions

Problem 5:

You and your friend have been tasked to write a C program that prompts the users to enter their initials. The program should then print to the monitor the user's initials. For example, here is how a run of the program should look:

```
midshipman@EC310:~/work $ ./a.out
Please enter your initials: PV
Thank you PV for using the program
```

Your friend has written the program shown below, but the program contains an error. (Note that the numbers shown on the far left are line numbers shown for convenience… these are not part of the program.)

```
1 #include <stdio.h>
2 int main( )
3 {
4 char init1, init2;
5 printf("Please enter your initials: ");
6 scanf("%c %c", &init1, &init2);
7 printf("Thank you %c%c for using the program\n", 
8 init2, init1);
9 }
```

(a) Determine the error. Note: Splitting a \printf\ statement across two lines (as shown on lines 7-8) does not cause any problems.

**The program prints out the initials in reverse order.**

**Actual output:**

```
midshipman@EC310:~/work $ ./a.out
Please enter your initials: PV
Thank you [VP] for using the program
```

(b) What type of error is this (syntax, runtime or logical)?

**Logical**