CS5334.251/252, Spring, 2020
Advanced Internet Information Processing
Assignment 1

Issued: 02/26/2020
Due: 03/25/2020

1. $(15 + 15 = 30$ pts$)$ The *passwd* file on Unix or Linux computers was discussed in class in the "password.pl" example. The last field of that file is the *login shell* of the user.
   Here is a sample of the passwd file:

```
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
uucp:x:10:14:uucp:/var/spool/uucp:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
gopher:x:13:30:gopher:/var/gopher:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/:/sbin/nologin
dbus:x:81:81:System message bus:/:/sbin/nologin
usbmuxd:x:113:113:usbmuxd user:/:/sbin/nologin
```

   Write a Perl script that does the following:

   (1) Count the number of users for each kind of login shell. For example, you script should print "10 people use /bin/bash as their

   (2) Print out the username and user id of each person. The user id is the third field. login shell" if there are 10 users whose login shell field is /bin/bash.

   (3) Print the names of all people who has no login shell. For example, you script should print "The following 12 people use /sbin/nologin: bin, daemon, adm ...".

2. (20 pts) Assume that the input is of the format:

$$\mathrm{name}_1 = \mathrm{value}_1 \& \mathrm{name}_2 = \mathrm{value}_2 \& \cdots \mathrm{name}_n = \mathrm{value}_n$$

Some of the $value_i$ could be empty, i.e. it is possible to have

$$name_i = \&name_{i+1} = value_{i+1}$$

Write a Perl script that extracts all $name_i$ and $value_i$ pairs, and print them out like:

$name_1$ is $value_1$
$name_2$ is $value_2$
$\ldots$
$name_n$ is $value_n$

Please note that there may be space characters around the "=" sign, and there may be empty "value" field. Your program should work for all these cases.

3. $(25 + 25 = 50 \text{ pts})$
A file of student grade information has the following format:

```
Humphries, Tired L    TH25769   TH25769@txstate.edu    student
Nadash, Maly L M      NM1253    NM1253@txstate.edu     student
Kumar, Anihara Sim    AK2775    AK2775@txstate.edu     student
Curry, Sunny          SC2062    SC2062@txstate.edu     student
```

The value of the first column is the last name, followed by the comma sign ',', followed by middle and initial of the student. Please note that the "blank" spaces between the words, numbers, email addresses and so on may be white space character, or may be a tab character. **Please also note that the number of fields in the first name and middle initial names is a variable. It can be any where from one and up.**

Write a Perl script that takes an input file of the above format, and correctly do the following:

a. Construct and print out a "username" based on the last name/first name/middle initial of each student, like this:

   Humphries_Tired_L

   Nadash_Maly_L_M

b. Extract the email address of each student.

Please follow my announcement on class web page and in class forum about submitting assignments and project. All homework assignments and project will have to be submitted using the class forum's homework/project management facility as announced and discussed in class. *Programs/scripts for each programming problem must be in source files and should not be in PDF or Word format files.*