Lab 4 – Arrays, Additional Math & String Functions

Code 1(10 pts): Create a program that prompts a user to create a password. The program then checks if the password valid if it has the following:

- Starts with a capital letter
- Contains at least one number
- Contains at least one of the following special characters **?**, **_** , **$**, or **!**
- At least 8 characters long

If the password is invalid, the user is prompted to enter another password. If the password is valid, the program will indicate to the user and quit. Example console window output is shown below.

```
Enter a password:letmein
Password Invalid!

Enter a password:L30ierssdd
Password Invalid!

Enter a password:L3tme!in
Password Valid
```

Code 2(10 pts): Create a program that prompts a user to enter in four radius values stored in an array. Once four radius values are entered, the program will compute the volume of a sphere and area of a circle for each radius. The program will only run once. Example console window output is shown below.

```
Enter radius 1:2.55
Enter radius 2:3.6
Enter radius 3:22.55
Enter radius 4:36.98
The volume for radius 2.55 is 69.46
The area for radius 2.55 is 20.43
The volume for radius 3.60 is 195.43
The area for radius 3.60 is 40.72
The volume for radius 22.55 is 48031.69
The area for radius 22.55 is 1597.51
The volume for radius 36.98 is 211830.73
The area for radius 36.98 is 4296.19
```

Code 3(10 pts): The following table contains grades for different sections of a class. Each column is an assignment, and each row is a section. Row 1 is section 101, row 2 is section 102, and row 3 is section 103.

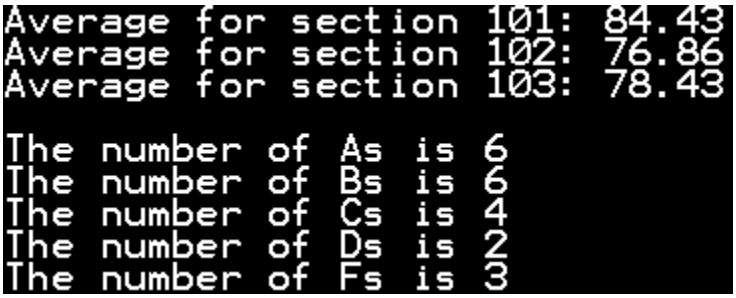
80	99	100	60	90	74	88
100	88	75	70	61	55	89
55	76	50	80	88	100	100

Write a program that will calculate the following:

- Average grade for each section
- The number of As, Bs, Ds, and Fs in the entire class

None of the calculations cannot be hard coded. For example Avg1 = 80 + 99 + 100 + 60 + 90 + 74 + 88; (or any variation) will result in 0 credit for code 3. You must use an array(s) and looping structure for the calculations in code 3. You may choose to implement in multiple 1D arrays or a single 2D array.

Example console window output is shown below.



Note: If using the Launchpad and float values are not displaying correctly, you may need to adjust the heap size. Instructions for this are found in Course Resources in Canvas.