# Report for Assignment 2

Question 1:

1. This code is saved in q1.py

2. This program allow the user to input a positive number n. The output will be the approximated square root of n, by using the Babylonian function.

3. The input must be positive numbers. If the user inputs a negative number or a string, the program will ask the user to re-input until they make the input right.

4. sample executions are as follows:

1): invalid input:

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface
mework/Question1.py
Please enter a positive value for n: 2
1.4142135623730954
Please enter a positive value for n: -7
you should enter a positive number
Please enter a positive value for n: a string
you should enter a positive number
```

2): valid input:

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/a
ppdata/local/programs/python/python38/python.exe c:/Use
rs/surface/Desktop/CSChomework/Question1.py
Please enter a positive value for n: 2
1.4142135623730954
```

Question 2:

1. This code is saved in q2.py

2. This code will print the first 100 nonpalindromic primes whose reversals are also primes (It is called an emirp). The numbers will be displayed in a 10*10 table.

3. This code doesn't need any input.

4. sample execution as follows:

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/Question2.py
13      17      31      37      71      73      79      97      107     113
149     157     167     179     199     311     337     347     359     389
701     709     733     739     743     751     761     769     907     937
941     953     967     971     983     991     1009    1021    1031    1033
1061    1069    1091    1097    1103    1109    1151    1153    1181    1193
1201    1213    1217    1223    1229    1231    1237    1249    1259    1279
1283    1301    1321    1381    1399    1409    1429    1439    1453    1471
1487    1499    1511    1523    1559    1583    1597    1601    1619    1657
1669    1723    1733    1741    1753    1789    1811    1831    1847    1867
1879    1901    1913    1933    1949    1979    3011    3019    3023    3049
```

Question 3:

1. This code is saved in q3.py

2. This program requires the user to input a positive number. The program will determine whether the conditions of a valid credit card are satisfied. If so, the program will print " It is valid", or it will print "It is not valid".

3. The input must be positive integer. If the user inputs negative number, float number, or a string, the program will ask the user to

input again until the user make it right.

4. the sample executions:

1): invalid input

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/Questio
n3.py
Please enter a credit card number (13~16 digits): -5
not a positive integer
Please enter a credit card number (13~16 digits): 3.14
not a positive integer
Please enter a credit card number (13~16 digits): A STRING
not a positive integer
Please enter a credit card number (13~16 digits):
```

2): valid input

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/Questio
n3.py
Please enter a credit card number (13~16 digits): 4388576018402626
It is not valid

C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/Questio
n3.py
Please enter a credit card number (13~16 digits): 4388576018410707
It is valid
```

Question 4:

1. This code is saved in q4.py

2. This program will ask the user to input two English words. Then it will check whether they are anagrams (i.e., they contain the same words). If they are, the program will print “is an anagram”. If not, it will print “is not an anagram”

3. The user must input two English words. If they input strings containing numbers, the program will ask them to re-input until they

make the input right.

4. sample executions:

1)： invalid input

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/q4.py
Please input the first string: cwe@1
invalid input
Please input the first string: 123
invalid input
Please input the first string: eng@
invalid input
Please input the first string:
```

2): valid input

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/q4.py
Please input the first string: listen
Please enter the second string: silent
is an anagram

C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/q4.py
Please input the first string: look
Please enter the second string: beauty
is not an anagram
```

Question 5

1. the code is saved in q5.py

2. the program will solve the locker puzzle. That is, the students subsequently open and close the locker, with a certain rule. After all the students have done their actions, the program will print the numbers of the open lockers at last. In this program, the open locker will be printed in a list. The output will be a list containing all the numbers where the lockers are open.

3. this program does not require any input.

4. sample executions:

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/q5.py
open [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
```

Question 6:

1. this code is saved in q6.py

2. this program will give a possible outcome of the Eight Queens puzzle randomly. The output will be a 8*8 table containing eight queens. In each row, column, and diagonal, there is at most 1 Q.

3. this program does not need input.

4. sample executions

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/q6.py
| | | | | |Q| |
|Q| | | | | | |
| | |Q| | | | |
| | | | | | |Q|
| | | | |Q| | |
| | | |Q| | | |
| |Q| | | | | |
| | | | |Q| | | |
```

```
C:\Users\surface\Desktop\CSChomework>c:/users/surface/appdata/local/programs/python/python38/python.exe c:/Users/surface/Desktop/CSChomework/q6.py
| | | |Q| | | |
| |Q| | | | | |
| | | |Q| | | |
| | | | | |Q| |
| | |Q| | | | |
| | | | | | | |Q|
| | | | |Q| | |
|Q| | | | | | |
```