Challenge 1

Write a program to solve a classic puzzle: There are 35 heads and 94 legs among the chickens and rabbits in a farm. How many rabbits and how many chickens do we have? Hint: Use `for` loop to iterate all possible solutions.

Challenge 2

Write a program to track the growing amount of investment over time. An initial deposit, called the principal amount is made. Each year, the amount increased by a fixed percentage, called the annual rate of the return. For example, a principal amount of $100 with an annual rate of return of 5% increases the first year by $5. The second year, the increase is 5% of the new amount $105, which is $5.25, and the new amount becomes $110.25. The program prompts the user to enter an initial amount, an annual rate (percentage) of return, and a number of years. It then prints out the amount of investment, rounded to 2 decimal places at the end of each year for the specified number of years. A sample output from the program is shown below:

```
Initial investment: $100, annual rate: 5%, years of investment: 4
Year 1: $105.00
Year 2: $110.25
Year 3: $115.76
Year 4: $121.55
```

Challenge 3

Write a program to print the list after removing numbers which are divisible by 5 or 7 from the numbers ranging from 1 to 100. Hint: Use Python's set.

Challenge 4

In this challenge, the task is to read a set of temperature data (the monthly high temperatures in degree Celsius at Heathrow Airport for 1948 through 2016) from a file and then find some basic information: the highest and lowest temperatures, the mean (average) temperature, and the median temperature (the temperature in the middle if all the temperatures are sorted).

The temperature data is in the file "data/Heathrow.txt". You should find the highest and lowest temperature, the average, and the median.

Hints: Use the built-in len(), min(), max(), sum() functions.

Challenge 5

Write a program called temperature.py that defines two functions:

1. `convert_cel_to_far()`, which takes one float parameter representing degrees Celsius and returns a float representing the same temperature in degrees Fahrenheit using the following formula:

    F = C * 9/5 + 32

2. `convert_far_to_cel()`, which takes one float parameter representing degrees Fahrenheit and returns a float representing the same temperature in degrees Celsius using the following formula:

    C = (F - 32) * 5/9

The program should do the following:

i. Prompt the user to enter a temperature in degrees Fahrenheit and then display the temperature converted to Celsius.
ii. Prompt the user to enter a temperature in degrees Celsius and then display the temperature converted to Fahrenheit.
iii. Display all converted temperatures rounded to two decimal places.

Challenge 6

Define a class named Circle which can be constructed by a radius. The Circle class has two methods which can compute the area and circumference. Create a Circle object with the radius of 4 using this class and compute its area and circumference.

Challenge 7

Write a program that will randomly choose an animal from a list, random shuffle the alphabets and ask the player to guess the correct animal. Use the list of animals below in your program.

```
animals = ['wolf', 'whale', 'cheetah', 'lizard', 'tiger', 'monkey', 'parrot',
'gorilla', 'dolphin', 'snake']
```

Hints: Use choice() and shuffle() functions from the random module.

Challenge 8

Write a program that reads ‘alice.txt’, remove punctuations and number from the words, and converts them to lowercase.

i. Count the total number of unique words in the text file, and the number of times each word is used (word frequency).
ii. Print the 10 most frequently used words in the book.
iii. Determine how many times the word ‘alice’ appears in the text file.

Hints: Use isalpha() and lower() methods for string object, and Counter() function from the collections module for word frequency.