**12 More Programs to Write and an Essay**

1. Write a program which asks the user for a radius of a circle and then outputs the area.
2. Write a program which calculates the sum of the first 100 numbers.
3. Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years old.
4. Create a program that asks the user for a number and then prints out a list of all the divisors of that number. (If you don’t know what a divisor is, it is a number that divides evenly into another number. For example, 13 is a divisor of 26 because 26 / 13 has no remainder.)
5. Write a program which creates a file called Chocolate.txt and writes a few lines to it.
6. Write a program which creates the following list

a **=** [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

and then prints out all of the numbers less than 10.

1. Write a program (using functions!) that asks the user for a long string containing multiple words. Print back to the user the same string, except with the words in backwards order. For example, say I type the string:

My name **is** Michele

Then I would see the string:

Michele **is** name My

shown back to me.

1. Write a program that asks the user how many Fibonacci numbers to generate and then generates them. Take this opportunity to think about how you can use functions. Make sure to ask the user to enter the number of numbers in the sequence to generate.(Hint: The Fibonacci seqence is a sequence of numbers where the next number in the sequence is the sum of the previous two numbers in the sequence. The sequence looks like this: 1, 1, 2, 3, 5, 8, 13, …)
2. Take two lists, say for example these two:

a **=** [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]

b **=** [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

and write a program that returns a list that contains only the elements that are common between the lists (without duplicates). Make sure your program works on two lists of different sizes.

1. Ask the user for a string and print out whether this string is a palindrome or not. (A **palindrome** is a string that reads the same forwards and backwards.)
2. Write a program which converts a decimal number to binary.
3. Write a program which converts a binary number to decimal.
4. Choose a title and write a A4 side essay on – you will need to conduct research
5. Is Artifical Intelligence changing our lives for better or worse?
6. What do you think the most interesting computing innovations have been in the last 100 years?
7. IBM (International Business Machines – a technology company ) is one of the most respected companies in the world. Write an essay about the type of research the company is involved.

(Hint: look on the website)