

# Agent-Based Modeling in Philosophy:

## Programming Exercises 2

### Exercise 1: Working with loops

1. Using a while loop, write a program that rolls two fair dice until the sum of the faces rolled is seven. Your program ought to print (a) each of the rolls of the dice, and (b) how many times the dice were rolled before the sum of the faces rolled was seven. That is, the output of your program ought to look like the following:

**Output:**

*Roll 1: You rolled a 1 and 5.*

*Roll 2: You rolled a 3 and 2.*

*Roll 3: You rolled a 5 and 2.*

*You rolled the dice 3 times before the sum of the two faces was equal to 7.*

2. Write a program that flips a fair coin until two consecutive heads are observed. Here, Your program ought to print the series of coin flips and the number of total flips before three consecutive heads were observed.

**Output:** *0000100101011*

*The number of total tosses was 13.*

3. The **Fibonacci numbers** are a sequence of positive whole numbers such that each number is the sum of the previous two in the sequence. The first seven Fibonacci numbers are 1, 1, 2, 3, 5, 8 and 13. Create an input button that takes a number n as input, and write a program that prints the first n Fibonacci numbers. Use a repeat loop. For example, if a user enters 20 as input, your program should produce the following output:

**Output:**

*[1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765]*