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Programming for Data Science

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Assignment 4
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Today you will augment / extend some of your solutions from previous Exercises:

1 Parse function

Write a function `parse_csv` that takes a filename, a `separator` character and a `has_header` flag and parses the provided csv file and returns the content in a proper data structure (e.g. list of lists or dictionary of lists). Adjust your code from Exercises 2 and 3 to use this function.

2 Dictionary with Lambdas

Create a dictionary with lambda functions as values and proper keys and modify your calculator from Exercise 1 such that it performs the correct arithmetic operation without if clauses.

3 Exceptions 1

Augment your calculator code to use exceptions. Put the calculator into a function and handle the exceptions outside the function. As argument it receives the list containing the two operands and the operator symbol, i.e. `res = calc(['5', '+', '10'])`. Your code should handle the following three problems:

- division by zero
- invalid operator symbol
- invalid operand (not a number, e.g. "hello + 5")

Handling in this case means that it is enough to print an informative message to the command line and end the program.

4 Exceptions 2

Make your calculator program interactive. So instead of taking the formula as command line arguments, they should be read from the command line at runtime. Asking the user for input is done using the function `input`, e.g.

```
form = input('Please enter formula: ')
# now form contains the input of the user as a single string
```

Now your program should repeatedly ask the user for a new formula until he inserts a valid formula. In this case your program returns the result. In case of an invalid formula, the program should also provide the information about what was wrong, e.g.

```
Please enter formula: 5 / 0
float division by zero
Try again!
Please enter formula: 5 & 5
Invalid operator &
Try again!
Please enter formula: 5 + a
could not convert string to float: 'a'
Try again!
Please enter formula: 5 + 5
10.0
```

Idea: Infinite loop that breaks only if no exception was raised in the calculator function.