

Week 2 Assignment

Questions

1. Write a Python function to find if a number is even or odd. Implement the function in a python program.
2. Write a Python function to find if which is the greater number of two numbers. Implement the function in a python program.
3. Write a Python function to prove Pascal's principal. $\frac{a}{b} = \frac{c}{d}$.
4. Write a Python function to find if the given year is leap year or not. Implement the function.
5. Write a Python function to find if the roots of a quadratic equation are imaginary, real or equal.

Bonus Questions

Bonus Question 1

In `deep.py`, implement a program that prompts the user for the answer to the Great Question of Life, the Universe and Everything, outputting `Yes` if the user inputs `42` or (case-insensitively) `forty-two` or `forty two`. Otherwise output `No`.

Bonus Question 2

Kramer visits a bank that promises to give \$100 to anyone who isn't greeted with a "hello." Kramer is instead greeted with a "hey," which he insists isn't a "hello," and so he asks for \$100. The bank's manager proposes a compromise: "You got a greeting that starts with an 'h,' how does \$20 sound?" Kramer accepts.

In a file called `bank.py`, implement a program that prompts the user for a greeting. If the greeting starts with "hello", output `$0`. If the greeting starts with an "h" (but not "hello"), output `$20`. Otherwise, output `$100`. Ignore any leading whitespace in the user's greeting, and treat the user's greeting case-insensitively.

Bonus Question 3

Python already supports math, whereby *you* can write code to add, subtract, multiply, or divide values and even variables. But let's write a program that enables *users* to do math, even without knowing Python.

In a file called `interpreter.py`, implement a program that prompts the user for an arithmetic expression and then calculates and outputs the result as a floating-point value formatted to one decimal place. Assume that the user's input will be formatted as `x y z`, with one space between `x` and `y` and one space between `y` and `z`, wherein:

- `x` is an integer
- `y` is `+`, `-`, `*`, or `/`
- `z` is an integer

For instance, if the user inputs `1 + 1`, your program should output `2.0`. Assume that, if `y` is `/`, then `z` will not be `0`.

Note that, just as `python` itself is an interpreter for Python, so will your `interpreter.py` be an interpreter for math!

Bonus Question 4

Suppose that you're in a country where it's customary to eat breakfast between 7:00 and 8:00, lunch between 12:00 and 13:00, and dinner between 18:00 and 19:00. Wouldn't it be nice if you had a program that could tell you what to eat when?

In `meal.py`, implement a program that prompts the user for a time and outputs whether it's `breakfast time`, `lunch time`, or `dinner time`. If it's not time for a meal, don't output anything at all. Assume that the user's input will be formatted in 24-hour time as `#:##` or `##:##`. And assume that each meal's time range is inclusive. For instance, whether it's 7:00, 7:01, 7:59, or 8:00, or anytime in between, it's time for breakfast.

Structure your program per the below, wherein `convert` is a function (that can be called by `main`) that converts `time`, a `str` in 24-hour format, to the corresponding number of hours as a `float`. For instance, given a `time` like `"7:30"` (i.e., 7 hours and 30 minutes), `convert` should return `7.5` (i.e., 7.5 hours).

```
def main():
    ...

def convert(time):
    ...

if __name__ == "__main__":
    main()
```