Lecture 03

Agenda

- Review previous class
- Defining and calling functions
- Function parameters, arguments and returns
- Dictionary and its applications

Function

- **Functions in Python** are reusable blocks of code that perform specific tasks. They allow you to encapsulate logic, making your code more organized, readable, and maintainable.
- **Defining a Function**
  In Python, you define a function using the **def** keyword, followed by the function name and parameters, if any.
- **Function Parameters and Return Values**
  Functions can accept parameters (input) and return values (output). Parameters allow you to pass data into the function, and return values allow the function to provide a result.

  Example:

```
def add(x, y): #defining a function
        result = x + y
        return result
sum_result = add(3, 5) #Calling a function
```

Dictionary

Dictionaries in Python are versatile data structures used to store and manipulate data as key-value pairs. They provide efficient access to values based o

n their associated keys.

Creating a dictionary of student gradesgrades = {

```
    "Alice": 92,
    "Bob": 85,
    "Charlie": 78,
    "David": 95
}
```

Accessing Values, You can retrieve values from a dictionary using square brackets [] and the associated key.

```
alice_grade = grades["Alice"]
# alice_grade will be 92
```

Dictionary continued

Python provides several functions to work with dictionaries effectively:

- `len(dictionary)`: Returns the number of key-value pairs in the dictionary.
- `dictionary.keys()`: Returns a list of all keys in the dictionary.
- `dictionary.values()`: Returns a list of all values in the dictionary.
- `dictionary.items()`: Returns a list of key-value pairs (tuples) in the dictionary.
- `dictionary.get(key)`: Retrieves the value associated with the specified key, or a default

Practice Problems

1. Solution for rock, paper, scissors
2. Pizza Order challenge
3. calculator
4. Paint area
5. Max, min, sum using functions
6. Leap Year

Congratulations, you've got a job at Python Pizza. Your first job is to build an automatic pizza order program.

Based on a user's order, work out their final bill.

Small Pizza: $15
Medium Pizza: $20
Large Pizza: $25

Pepperoni for Small Pizza: +$2
Pepperoni for Medium or Large Pizza: +$3
Extra cheese for any size pizza: + $1

Example:
size = "L" S
add_pepperoni = "Y"
extra_cheese = "N"
Output: Your final bill is: $28.

Starting code:

```
print("Welcome to Python Pizza Deliveries!")

size = input("What size pizza do you want? S, M, or L ")
add_pepperoni = input("Do you want pepperoni? Y or N ")
extra_cheese = input("Do you want extra cheese? Y or N ")
```

Leap Year

Write a **isLeapYear()** function to work out whether if a particular year is a leap year.

on every year that is evenly divisible by 4
 except every year that is evenly divisible by 100
unless the year is also evenly divisible by 400`

e.g. The year 2000:
2000 ÷ 4 = 500 (Leap)
2000 ÷ 100 = 20 (Not Leap)
2000 ÷ 400 = 5 (Leap!)
So the year 2000 is a leap year.

But the year 2100 is not a leap year because:
2100 ÷ 4 = 525 (Leap)
2100 ÷ 100 = 21 (Not Leap)
2100 ÷ 400 = 5.25 (Not Leap)

Paint wall problem

You are painting a wall. The instructions on the paint can says that **1 can of paint can cover 5 square meters of wall.** Given a random height and width of wall, calculate how many cans of paint you'll need to buy.

number of cans = (wall height x wall width) ÷ coverage per can.
e.g. Height = 2, Width = 4, Coverage = 5
number of cans = (2 * 4) / 5
= 1.6

But because you can't buy 0.6 of a can of paint, **the result should be rounded up to 2 cans.**

Starting code:

```
test_h = int(input("Height of wall: "))
test_w = int(input("Width of wall: "))
coverage = 5
paint_calc(test_h, test_w, coverage)
```

Rock, papers, scissors

1. Take input from user (0, 1, 2), where 0 is rock, 1 is paper, 3 is scissors
2. Generate random input from computer (0-2), same as user
3. Compute using conditional statements to find out who won
4. Print winner

Example:

User Input = 0
Computer = 0

Output: “Its a draw”