# B.Sc.(Data Science) I sem

## Problem Solving and Python Programming

## Unit-II

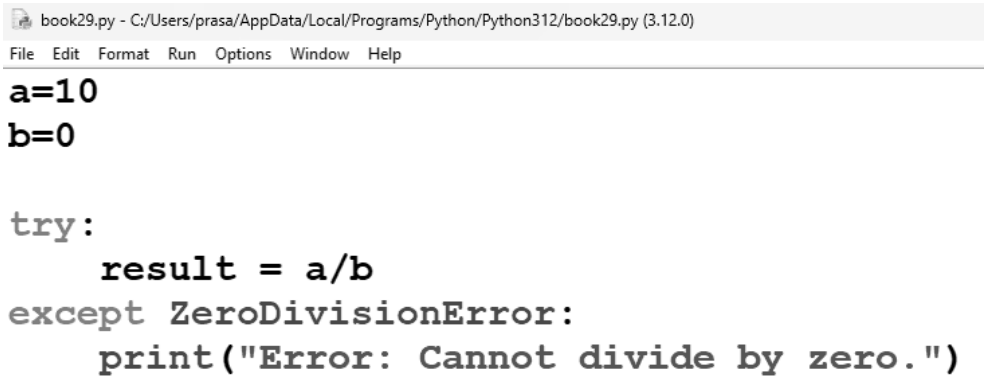
**1. Explain try..except with an example**

Error handling is a crucial aspect of programming that allows developers to manage unexpected situations gracefully. In Python, this is primarily accomplished through the use of the try and except statements. The try block contains code that may potentially raise an exception. If an error occurs within this block, Python immediately stops executing the code and jumps to the corresponding except block, where the error can be handled appropriately.

The basic syntax of the try and except statements is as follows:

```
try:
    # code that may raise an exception
except ExceptionType:
    # code to handle the exception
```

**Example: Handling Division by Zero**




**2. Define a function with an example**

Defining a function in Python is an essential skill that allows developers to create reusable blocks of code. The syntax for defining a function begins with the def keyword, followed by the function name and parentheses. Inside the parentheses, you can optionally include parameters that the function can accept. After the parentheses, a colon (:) indicates the start of the function body, which is indented to denote the code that will be executed when the function is called.

**Syntax**

```
def function_name(parameters):
    # Function body
```

```
def arithmetic(a, b):
    print(f"{a} + {b} = {a + b}")
    print(f"{a} - {b} = {a - b}")
    print(f"{a} * {b} = {a * b}")
    if b != 0:
        print(f"{a} / {b} = {a / b}")
    else:
        print("Division by zero is not allowed")

a = float(input("Enter first number: "))
b = float(input("Enter second number: "))
arithmetic(a, b)
```

### 3. What a string? Write various string functions

In Python, a string is a sequence of characters enclosed within either single quotes (') or double quotes ("). Strings are one of the fundamental data types in Python, playing a crucial role in text processing and manipulation.

Creating a string as follows

Str= 'Hello, World!'  (or) Str= “Hello, World!”

String can be accessed using the following syntax

Str[index]

Example: str[0] is H

Some of the functions of strings are:

| Function | Description |
|---|---|
| str.upper() | Converts all characters to uppercase |
| str.lower() | Converts all characters to lowercase |
| str.title() | Converts the first letter of each word to uppercase |
| str.swapcase() | Swaps case of all characters (upper → lower, lower → upper) |
| str.replace(old, new) | Replaces occurrences of a substring |
| str.split(delimiter) | Splits string into a list (default delimiter is space) |

| Function | Description |
|---|---|
| str.join(iterable) | Joins elements of an iterable into a string with a separator |
| str.isalpha() | Returns True if all characters are alphabets |
| str.isdigit() | Returns True if all characters are digits |
| str.isalnum() | Returns True if all characters are alphanumeric |
| str.isspace() | Returns True if string contains only whitespace |
| str.isupper() | Returns True if all characters are uppercase |
| str.islower() | Returns True if all characters are lowercase |

**4. Write a program for command line arguments**

```
import sys
a = int(sys.argv[1])
b = int(sys.argv[2])
# Calculate the sum
c = a + b
print('First Argument =', a)
print('Second Argument =', b)
print('Sum =', c)
```

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**Execution:**

- Save the file as argsprog.py
- Open Command Prompt (Win+R → type cmd → Enter)
- Navigate to the folder where your program is saved using cd command, e.g.:
- cd C:\Users\YourName\Desktop
- Run the program with two numbers as arguments:
- python argsprog.py 10 20

**5. Write about Formatting strings**

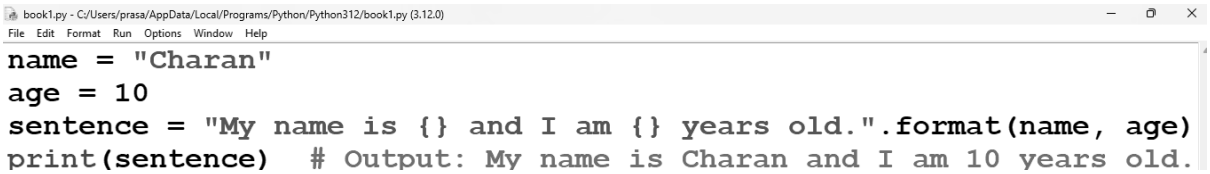
Python offers two primary ways to format strings:

- str.format()
- f-strings

Both methods allow you to embed variables and expressions within strings, making your code more readable and dynamic.

**str.format():**

- Introduced in Python 2.6.
- Uses curly braces {} as placeholders within the string.
- Values to be inserted are passed as arguments to the format() method.
- **Example**:




**f-strings (Formatted String Literals):**

- Introduced in Python 3.6.
- Prefix the string with the letter f or F.
- Embed expressions directly within the string using curly braces {}.
- Example