Standard Modules

random Module:

Example:

```
import random


# Generate a random integer between 1 and 10 (inclusive)
random_number = random.randint(1, 10)
print("Random Number:", random_number)
```

Assignment:

Create a function that simulates rolling a six-sided die and returns the result.

Solution –

```
import random

def roll_die():
    return random.randint(1, 6)

result = roll_die()
print("Die Roll Result:", result)
```

math Module:

Example:

```
import math

# Calculate the square root of a number
```

```
sqrt_result = math.sqrt(25)
print("Square Root:", sqrt_result)
```

Assignment:

Write a function that calculates the area of a circle given its radius using the **math** module.

Solution –

```
import math

def calculate_circle_area(radius):
    return math.pi * radius**2

radius = 5
area = calculate_circle_area(radius)
print("Circle Area with Radius", radius, ":", area)
```

string Module:

Example:

```
import string

# Get all uppercase letters
uppercase_letters = string.ascii_uppercase
print("Uppercase Letters:", uppercase_letters)
```

Assignment:

Create a function that generates a random password of a given length using uppercase letters, digits, and special characters.

Solution –

```
import string
import random

def generate_random_password(length):
    characters = string.ascii_letters + string.digits + string.punctuation
    password = ''.join(random.choice(characters) for _ in range(length))
    return password

password_length = 12
random_password = generate_random_password(password_length)
print("Random Password:", random_password)
```

date and time Modules:

Example:

```
from datetime import date, time

# Get the current date
current_date = date.today()
print("Current Date:", current_date)

# Get the current time
current_time = time.now()
print("Current Time:", current_time)
```

Assignment:

Write a function that calculates the difference in days between two given dates.

Solution –

```
from datetime import date

def calculate_date_difference(date1, date2):
    return (date2 - date1).days

# Example dates
date_today = date.today()
other_date = date(2024, 1, 1)

difference = calculate_date_difference(date_today, other_date)
print("Date Difference in Days:", difference)
```

os Module:

Example:

```
import os

# Get the current working directory
current_directory = os.getcwd()
print("Current Directory:", current_directory)
```

Assignment:

Create a function that lists all files in a specified directory.

```
import os

def list_files_in_directory(directory):
    files = [f for f in os.listdir(directory) if os.path.isfile(os.path.join(directory, f))]
    return files

# Example directory
directory_path = "/path/to/your/directory"
file_list = list_files_in_directory(directory_path)
print("Files in Directory:", file_list)
```

sys Module:

Example:

```
import sys

# Get command line arguments
command_line_arguments = sys.argv
print("Command Line Arguments:", command_line_arguments)
```

Assignment:

Write a script that takes two numbers as command line arguments and prints their sum.

Solution –

```
import sys
```

```
def add_two_numbers_from_command_line():
    if len(sys.argv) != 3:
        print("Usage: python script.py num1 num2")
        return

    num1 = float(sys.argv[1])
    num2 = float(sys.argv[2])
    result = num1 + num2
    print("Sum of", num1, "and", num2, "is:", result)

add_two_numbers_from_command_line()
```