

PYTHON PRACTICAL ASSIGNMENT 2

- Write python programs for following
1) Display the difference in dates

```
from datetime import date
# Two dates
d1 = date(2025, 9, 6)
d2 = date(2024, 1, 1)
# Find difference
diff = d1 - d2
print("Difference in days:", diff.days)
```

OUTPUT:

```
Difference in days: 614
```

2) Time Since Epoch in Hours and Minutes

```
import time
# Time since Jan 1, 1970
seconds = time.time()
hours = int(seconds // 3600)
minutes = int((seconds % 3600) // 60)
print("Time since epoch:", hours, "hours and", minutes, "minutes")
```

OUTPUT:

```
Time since epoch: 488095 hours and 20 minutes
```

3) Your Age in Years, Months, Days

```
from datetime import date
# Replace with your birthdate
birth = date(2005, 5, 20)
today = date.today()
years = today.year - birth.year
months = today.month - birth.month
```

```

days = today.day - birth.day
if days < 0:
    months -= 1
    days += 30
if months < 0:
    years -= 1
    months += 12
print("Your age is:", years, "years", months, "months", days, "days")

```

OUTPUT:

```

Your age is: 20 years 3 months 16 days

```

4) Display trigonometric table of sin, cos and tan

```

import math
print("Angle\tSin\tCos\tTan")
for angle in range(0, 91, 15):
    rad = math.radians(angle)
    print(angle, "\t", round(math.sin(rad), 2), "\t", round(math.cos(rad), 2), "\t",
end=")
    if angle == 90:
        print("undefined")
    else:
        print(round(math.tan(rad), 2))

```

OUTPUT:

Angle	Sin	Cos	Tan
0	0.0	1.0	0.0
15	0.26	0.97	0.27
30	0.5	0.87	0.58
45	0.71	0.71	1.0
60	0.87	0.5	1.73
75	0.97	0.26	3.73
90	1.0	0.0	undefined

5) Generate 10 random numbers

```
import random
for i in range(10):
    print(random.randint(1, 100))
```

OUTPUT:

```
2
12
25
96
54
57
86
79
84
2
```

6) Authentication: Ask username, password and compare

```
user = input("Username: ")
pwd = input("Password: ")
if user == "admin" and pwd == "1234":
    print("Login successful!")
else:
    print("Login failed!")
```

OUTPUT:

```
Username: admin
Password: 1234
Login successful!
```

7) Authentication: Ask username, password and compare with encryption

```
def encrypt(text):
    key = 5
    return "".join(chr(ord(c) ^ key) for c in text)

# Stored credentials (encrypted)
stored_user = encrypt("admin")
stored_pass = encrypt("1234")

# Input from user
user = input("Username: ")
pwd = input("Password: ")
if encrypt(user) == stored_user and encrypt(pwd) == stored_pass:
    print("Login successful!")
```

```
else:  
    print("Login failed!")
```

OUTPUT:

```
Username: admin  
Password: 1234  
Login successful!
```

8) Authentication: Ask username, password and compare with hashing

```
import hashlib  
  
def hash_value(text):  
    return hashlib.sha256(text.encode()).hexdigest()  
  
stored_user = hash_value("admin")  
stored_pass = hash_value("1234")  
  
user = input("Username: ")  
pwd = input("Password: ")  
  
if hash_value(user) == stored_user and hash_value(pwd) == stored_pass:  
    print("Login successful!")  
else:  
    print("Login failed!")
```

OUTPUT:

```
Username: admin  
Password: 1234  
Login successful!
```

9) Convert string "Hello\$World" into Base64

```
import base64

text = "Hello$World"

encoded = base64.b64encode(text.encode())

print("Base64:", encoded.decode())
```

OUTPUT:

```
Base64: SGVsbG8kV29ybGQ=
```

10) Code for String Manipulation

1. Concatenation

```
str1 = "Hello"

str2 = "World"

result = str1 + " " + str2

print("1. Concatenation:", result) # Hello World
```

2. String Formatting

```
name = "Alice"

age = 30

formatted = f"My name is {name} and I am {age} years old."

print("2. String Formatting:", formatted)
```

3. Changing Case

```
text = "hello world"

print("3. Upper Case:", text.upper())    # HELLO WORLD

print("  Lower Case:", text.lower())     # hello world

print("  Title Case:", text.title())     # Hello World
```

```
print(" Capitalize:", text.capitalize()) # Hello world
```

4. Splitting and Joining

```
sentence = "Python is awesome"
```

```
words = sentence.split()
```

```
print("4. Splitting:", words) # ['Python', 'is', 'awesome']
```

```
joined = "-".join(words)
```

```
print(" Joining:", joined) # Python-is-awesome
```

5. Replacing Substrings

```
text = "I love Java"
```

```
new_text = text.replace("Java", "Python")
```

```
print("5. Replacing:", new_text) # I love Python
```

6. Removing Whitespace

```
text = " Hello World "
```

```
print("6. Strip:", text.strip()) # 'Hello World'
```

```
print(" LStrip:", text.lstrip()) # 'Hello World '
```

```
print(" RStrip:", text.rstrip()) # ' Hello World'
```

7. Checking for Substrings

```
text = "Python programming"
```

```
print("7. 'Python' in text:", "Python" in text) # True
```

```
print(" 'Java' not in text:", "Java" not in text) # True
```

8. String Slicing

```
text = "Hello, World!"
```

```
print("8. text[0:5]:", text[0:5])      # Hello
print("  text[:5]:", text[:5])        # Hello
print("  text[7:]:", text[7:])        # World!
print("  text[-6:]:", text[-6:])      # World!
```

9. Reversing a String

```
text = "Python"
reversed_text = text[::-1]
print("9. Reversed:", reversed_text)  # nohtyP
```

10. Checking Prefix/Suffix

```
filename = "example.txt"
print("10. Starts with 'ex':", filename.startswith("ex")) # True
print("  Ends with '.txt':", filename.endswith(".txt")) # True
```

OUTPUT:

```
1. Concatenation: Hello World
2. String Formatting: My name is Alice and I am 30 years old.
3. Upper Case: HELLO WORLD
   Lower Case: hello world
   Title Case: Hello World
   Capitalize: Hello world
4. Splitting: ['Python', 'is', 'awesome']
   Joining: Python-is-awesome
5. Replacing: I love Python
6. Strip: Hello World
```



```
LStrip: Hello World
RStrip:  Hello World
7. 'Python' in text: True
   'Java' not in text: True
8. text[0:5]: Hello
   text[:5]: Hello
   text[7:]: World!
   text[-6:]: World!
9. Reversed: nohtyP
10. Starts with 'ex': True
    Ends with '.txt': True
```