Data Science - Summer 2025

Course: Data Science | Instructor: Dr. Adil Khan | Submitted by: Umair Saad - 023-21-0182

Python (Syntax, Data types, Operators, If Else statements, While and For Loop, UDFs, Globa

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Python (Syntax, Data types, Operators, If Else statements, While and For Loop, UDFs, Global Variables) - Assignment - 01

```
# Task 1
name = "Umair Saad"
age = 22
print(f"My name is {{name}} and I am {{age}} years old.")

# Task 2
int_var = 10
float_var = 10.5
string_var = "Hello"
bool_var = True
list_var = [1, 2, 3]
print(type(int_var), type(float_var), type(string_var), type(bool_var), type(list_var))

# Task 3
a = 15
b = 5
print("Addition:", a + b)
print("Subtraction:", a - b)
print("Multiplication:", a * b)
print("Division:", a / b)

# Task 4
full_name = "Umair Saad"
print(full_name.upper())
print(full_name.lower())
print(full_name[::-1])

# Task 5
x = 12
y = 5
print("Power:", x ** y)
print("Remainder:", x % y)

# Task 6
number = -7
if number > 0:
    print("Positive")
elif number < 0:
    print("Negative")
else:
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    print("Zero")

# Task 7
print("Even numbers (for loop):")
for i in range(1, 21):
    if i % 2 == 0:
        print(i, end=" ")

print("\nEven numbers (while loop):")
i = 1
while i <= 20:
    if i % 2 == 0:
        print(i, end=" ")
    i += 1

# Task 8
def greet(name):
    print(f"Hello, {{name}}! Welcome to Python class.")

greet("Umair")

# Task 9
def is_prime(num):
    if num < 2:
        return False
    for i in range(2, int(num ** 0.5) + 1):
        if num % i == 0:
            return False
    return True

user_input = 7
if is_prime(user_input):
    print(f"{{user_input}} is a prime number.")
else:
    print(f"{{user_input}} is not a prime number.")

# Task 10
numbers = list(range(1, 11))
squares = list(map(lambda x: x**2, numbers))
evens = list(filter(lambda x: x % 2 == 0, numbers))
print("Squares:", squares)
print("Even numbers:", evens)

# Task 11
def add(x, y): return x + y
def subtract(x, y): return x - y
def multiply(x, y): return x * y
def divide(x, y): return x / y

while True:
    print("\n1. Add\n2. Subtract\n3. Multiply\n4. Divide\n5. Exit")
    choice = "5"
    if choice == "1":
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        print(add(5, 3))
    elif choice == "2":
        print(subtract(5, 3))
    elif choice == "3":
        print(multiply(5, 3))
    elif choice == "4":
        print(divide(5, 3))
    elif choice == "5":
        break
    else:
        print("Invalid choice")

# Task 12
import random
target = random.randint(1, 10)
guess = 5
while guess != target:
    if guess < target:
        print("Too low")
    else:
        print("Too high")
    guess = target
print("Correct!")

# Task 13
words = ['apple', 'banana', 'kiwi', 'avocado', 'pear']
long_words = list(filter(lambda w: len(w) > 5, words))
print("Words with length > 5:", long_words)

# Task 14
def fibonacci(n):
    a, b = 0, 1
    count = 0
    while count < n:
        print(a, end=" ")
        a, b = b, a + b
        count += 1

fibonacci(10)
```