Programming Resources - Quick Reference Guide

Python Programming Essentials

1. Basic Syntax

```
# Variables and Data Types
name = "Python"    # String
age = 25           # Integer
height = 5.9       # Float
is_student = True  # Boolean
```

2. Data Structures

```
# Lists
fruits = ["apple", "banana", "orange"]
fruits.append("mango")    # Add element
fruits.remove("banana")   # Remove element

# Dictionaries
student = {"name": "John", "age": 20, "grade": "A"}
print(student["name"])    # Access value
```

3. Control Structures

```
# Conditional statements
if age >= 18:
    print("Adult")
elif age >= 13:
    print("Teenager")
else:
    print("Child")
```

4. Functions and Classes

```
# Functions

def calculate_area(length, width):
    """Calculate area of rectangle"""
    return length * width

# Lambda functions
square = lambda x: x ** 2
print(square(5))  # Output: 25


# Classes

class Student:
    def __init__(self, name, age):
        self.name = name
        self.age = age

    def introduce(self):
        return f"Hi, I’m {self.name}"


# Object creation
student1 = Student("Alice", 20)
print(student1.introduce())
```

5. File Handling

```
# Reading files
with open("data.txt", "r") as file:
    content = file.read()

# Writing files
with open("output.txt", "w") as file:
    file.write("Hello World")
```