

Python Programs Collection

1. Basic Programs

Palindrome Check

```
def is_palindrome(s):  
    return s == s[::-1]  
  
print(is_palindrome("madam")) # True
```

Prime Number Check

```
def is_prime(n):  
    if n < 2: return False  
    for i in range(2, int(n**0.5)+1):  
        if n % i == 0: return False  
    return True  
  
print(is_prime(7)) # True
```

Factorial

```
def factorial(n):
```

```
result = 1

for i in range(2, n+1):
    result *= i

return result


print(factorial(5)) # 120
```

2. Data Structures

List Example

```
-----

fruits = ["apple", "banana", "cherry"]

fruits.append("orange")

print(fruits)
```

Set Example

```
-----

colors = {"red", "green", "blue"}

colors.add("yellow")

print(colors)
```

Dictionary Example

```
-----

person = {"name": "Alice", "age": 25}
```

```
person["city"] = "New York"
```

```
print(person)
```

Tuple Example

```
dimensions = (10, 20, 30)
```

```
print(dimensions[1])
```

3. Control Structures

For Loop Example

```
for i in range(5):
```

```
    print(i)
```

While Loop Example

```
i = 0
```

```
while i < 5:
```

```
    print(i)
```

```
    i += 1
```

If-Else Example

```
age = 18
```

```
if age >= 18:
```

```
    print("Adult")
```

```
else:
```

```
    print("Minor")
```

4. Functions

Simple Function

```
def greet(name):
```

```
    return f"Hello, {name}!"
```

```
print(greet("Bob"))
```

5. Exception Handling

Handling Exceptions

```
try:
```

```
    x = int(input("Enter a number: "))
```

```
    print(10 / x)
```

```
except ZeroDivisionError:
```

```
    print("Cannot divide by zero.")
```

except ValueError:

```
    print("Invalid input.")
```

6. File Handling

Writing to a File

```
with open("example.txt", "w") as f:
```

```
    f.write("Hello World!")
```

Reading from a File

```
with open("example.txt", "r") as f:
```

```
    content = f.read()
```

```
    print(content)
```