Downloads > qcm_nm2.py > ...

```python
# Quality Control System in Manufacturing

# Step 1: Define acceptable size range
MIN_SIZE = 9.8
MAX_SIZE = 10.2

# Step 2: Sample data (in mm) - simulate product measurements
product_sizes = [10.0, 9.7, 10.3, 9.9, 10.1, 10.5, 9.6, 10.2, 9.85, 10.15]

# Step 3: Create empty lists to store results
passed_products = []
failed_products = []

# Step 4: Check each product size
for index, size in enumerate(product_sizes, start=1):
    if MIN_SIZE <= size <= MAX_SIZE:
        passed_products.append((index, size))
        print(f"Product {index}: {size} mm - ✅ PASS")
    else:
        failed_products.append((index, size))
        print(f"Product {index}: {size} mm - ❌ FAIL")

print("\n" + "-"*40)

# Step 5: Print Summary
print("SUMMARY REPORT\n")

print(f"Total Products Checked: {len(product_sizes)}")
print(f"Passed: {len(passed_products)}")
print(f"Failed: {len(failed_products)}")

# Step 6: Detailed Passed Products
print("\nPassed Products:")
for i, size in passed_products:
    print(f"  Product {i}: {size} mm")

# Step 7: Detailed Failed Products
print("\nFailed Products:")
for i, size in failed_products:
    print(f"  Product {i}: {size} mm - OUT OF RANGE")

# Step 8: Conclusion
if len(failed_products) == 0:
    print("\nAll products passed quality control ✅")
else:
    print("\nSome products failed quality control ! ")
```

```
PS C:\Users\sivaprakasam.A> & C:/Users/sivaprakasam.A/AppData/Local/Programs/Python/Python313/python.exe c:/Users/sivaprakasam.A/Downloads/qcm_nm2.py
Product 1: 10.0 mm - ✅ PASS
Product 2: 9.7 mm - ❌ FAIL
Product 3: 10.3 mm - ❌ FAIL
Product 4: 9.9 mm - ✅ PASS
Product 5: 10.1 mm - ✅ PASS
Product 6: 10.5 mm - ❌ FAIL
Product 7: 9.6 mm - ❌ FAIL
Product 8: 10.2 mm - ✅ PASS
Product 9: 9.85 mm - ✅ PASS
Product 10: 10.15 mm - ✅ PASS

----------------------------------------
SUMMARY REPORT

Total Products Checked: 10
Passed: 6
Failed: 4

Passed Products:
  Product 1: 10.0 mm
  Product 4: 9.9 mm
  Product 5: 10.1 mm
  Product 8: 10.2 mm
  Product 9: 9.85 mm
  Product 10: 10.15 mm

Failed Products:
  Product 2: 9.7 mm - OUT OF RANGE
  Product 3: 10.3 mm - OUT OF RANGE
  Product 6: 10.5 mm - OUT OF RANGE
  Product 7: 9.6 mm - OUT OF RANGE

Some products failed quality control !
```