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WORKSHEET 3 – TESTING (Lap Times)

1. Original code:

```
lap_times = []
print("=====Lap time in recorder=====")

for i in range(5):
    laps = float(input("Please enter lap time in seconds:"))
    lap_times.append(laps)

#=====TARGET=====
target = float(input("what is your target lap time?"))

#overall time for 5 laps
total = sum(lap_times)
print("Overall time for 5 laps was:", total)

#AVERAGE
average = total / 5
print("Average lap time was:", average)

#FASTEST

fast = min(lap_times)
for a in range (5)
    if lap_times < fast:
        fast =

low = max(lap_times)
if fast > target:
    print("the slowest laps was", low)
```

2. Code Testing

For each test below, run your code and show the results of the scenarios below. Present a screenshot of what happened when the programme ran. Did the programme behave correctly or did it do something unexpected, and if so, why?

a) Test a lap time for your programme:

- i) 42 seconds
- ii) 2 seconds
- iii) -4 seconds
- iv) 53444 seconds
- v) Test the target lap time – show that the values entered are reasonable

b) Using the same five lap times as the sample output ie

Lap 1: 42.3
Lap 2: 42.1
Lap 3: 44
Lap 4: 44
Lap 5: 39.4

Examine each statistic (1-6) and comment on whether the correct answer(s) are displayed or not. (If any statistics were incomplete after Phase 1 (code completed in class) simply write "Unfinished")

c) Test two further sets of lap times of your own choice.

Template for tests:

Test: i) 42 seconds
Screenshot(s) of output: 
Result: Did the programme behave as expected ie syntactically and logically correct? NO (delete as appropriate) If NO, what went wrong and why? Suggest how things could be improved The programme failed to run because of an IndentationError on line 25. In Python, every if statement must be followed by indented block of code. Since this is a syntax error, the Python interpreter stop the execution immediately, preventing any data input. Additionally, the original code has a logical error trying to comparer the entire list lap_times with a single number fast .

Suggest how things could be improved:

1. Fix the indentation by adding a valid block of code after the if statement.
2. Correct the logic to compare individual list elements instead of the whole list.

x

Test:

i) 2 seconds

Screenshot(s) of output:

```
C:\Users\aleks\PycharmProjects\PythonProject\.venv\Scripts\python.exe C:\Users\aleks\PycharmProjects\PythonProject\Work-Sheet3.py
File "C:\Users\aleks\PycharmProjects\PythonProject\Work-Sheet3.py", line 27
    low = max(lap_times)
IndentationError: expected an indented block after 'if' statement on line 25

Process finished with exit code 1
```

Result: Did the programme behave as expected ie syntactically and logically correct?

NO (delete as appropriate)

If NO, what went wrong and why? Suggest how things could be improved

The programme failed to run because of an **IndentationError** on line 25. In Python, every **if** statement must be followed by indented block of code. Since this is a syntax error, the Python interpreter stop the execution immediately, preventing any data input. Additionally, the original code has a logical error trying to comparer the entire list **lap_times** with a single number **fast**.

Test:

i) -4 seconds

Screenshot(s) of output:

```
C:\Users\aleks\PycharmProjects\PythonProject\.venv\Scripts\python.exe C:\Users\aleks\PycharmProjects\PythonProject\Work-Sheet3.py
File "C:\Users\aleks\PycharmProjects\PythonProject\Work-Sheet3.py", line 27
    low = max(lap_times)
IndentationError: expected an indented block after 'if' statement on line 25

Process finished with exit code 1
```

Result: Did the programme behave as expected ie syntactically and logically correct?

NO (delete as appropriate)

If NO, what went wrong and why? Suggest how things could be improved

The programme failed to run because of an **IndentationError** on line 25. In Python, every **if** statement must be followed by indented block of code. Since this is a syntax error, the Python interpreter stop the execution immediately, preventing any data input. Additionally, the original code has a logical error trying to compare the entire list **lap_times** with a single number **fast**.

Test:

i) 53444 seconds

Screenshot(s) of output:

```
C:\Users\aleks\PycharmProjects\PythonProject\.venv\Scripts\python.exe C:\Users\aleks\PycharmProjects\PythonProject\Work-Sheet3.py
File "C:\Users\aleks\PycharmProjects\PythonProject\Work-Sheet3.py", line 27
    low = max(lap_times)
IndentationError: expected an indented block after 'if' statement on line 25

Process finished with exit code 1
```

Result: Did the programme behave as expected ie syntactically and logically correct?

NO (delete as appropriate)

If NO, what went wrong and why? Suggest how things could be improved

The programme failed to run because of an **IndentationError** on line 25. In Python, every **if** statement must be followed by indented block of code. Since this is a syntax error, the Python interpreter stop the execution immediately, preventing any data input. Additionally, the original code has a logical error trying to compare the entire list **lap_times** with a single number **fast**.

Examine each statistic (1-6) and comment on whether the correct answer(s) are displayed or not. (If any statistics were incomplete after Phase 1 (code completed in class) simply write “Unfinished”)

1. **Overall time: Unfinished.** Although the formula `sum(lap_times)` is correct, the program crashes before displaying it.
2. **Average lap time: Unfinished.** The calculation is there, but it never reaches the print statement.
3. **Fastest lap: Unfinished.** The logic `if lap_times < fast` is incorrect and caused the syntax error.
4. **Slowest lap: Unfinished.** The variable `low` is calculated, but the code doesn't identify which lap number it was.
5. **Target comparison: Unfinished.** There is no counter to track how many laps were better than the target.
6. **Lap comparison: Unfinished.** This feature was not implemented in the original version of the code.

3. Consider the results of the above tests and revisit your original code in order to address any tests that failed and/or improve code efficiency.

(Note: you may not be able to solve all of the problems that were encountered, but solve as many as you can.)

Paste your full revised code here :

```
# --- REVISED CODE: WORKSHEET 3 ---
# Fixed the indentation error and completed the missing statistics

print("Welcome to the Racing Stats program:")
print("Please enter the latest lap times... (in seconds)")

lap_times = []

# Input for 5 laps
for i in range(5):
    laps = float(input("Lap " + str(i + 1) + ": "))
    # Basic validation to avoid negative numbers as requested
    if laps < 0:
        print("Warning: Negative time entered")
    lap_times.append(laps)

# Target lap time input
target = float(input("\nWhat is your target lap time? "))

print("\nYour statistics...")

# 1. Overall time
total = sum(lap_times) # Using the sum function from original code
print("1. Overall time for 5 laps was:", total, "seconds")

# 2. Average lap time
average = total / 5
print("2. Average lap time was:", average, "seconds")

# 3 & 4. Fastest and Slowest laps
fast = min(lap_times)
low = max(lap_times)

# We find the lap numbers using a simple loop
fast_lap_num = 0
slow_lap_num = 0

for i in range(5):
    if lap_times[i] == fast:
        fast_lap_num = i + 1
    if lap_times[i] == low:
        slow_lap_num = i + 1
```

```

print("3. The fastest lap was lap", fast_lap_num, "in", fast, "seconds")
print("4. The slowest lap was lap", slow_lap_num, "in", low, "seconds")

# 5. Laps better than or equal to target
target_count = 0
for time in lap_times:
    if time <= target:
        target_count = target_count + 1
print("5.", target_count, "of your laps were better than or equal to your target")

# 6. Comparison with previous lap
print("\n6.")
print("Lap 1 was", lap_times[0])

for i in range(1, 5):
    actual = lap_times[i]
    anterior = lap_times[i-1]

    if actual < anterior:
        result = "faster than"
    elif actual > anterior:
        result = "slower than"
    else:
        result = "equal to"

    print("Lap", i + 1, "was", actual, "which was", result, "the previous lap")

```