**Name**: \_\_\_\_Tailang CAO\_\_\_

|  |  |
| --- | --- |
| **Q1** | **The main file is executing file01 and file02, which are each 4kb big, and too small. The runtime is thus too short to be recorded with two decimal numbers.** |
| **Q2** | **A screenshot of a computer screen  Description automatically generated**  **A screenshot of a computer code  Description automatically generated** |
| **Q3** | **\_\_gnu\_cxx::\_\_enable\_if<std::\_\_is\_char<char>::\_\_value, bool>::\_\_type std::operator==<char>(std::\_\_cxx11::basic\_string<char,$**  **Consuming 32.35% of time** |
| **Q4** | **The same one as the one consuming the most time.**  **\_\_gnu\_cxx::\_\_enable\_if<std::\_\_is\_char<char>::\_\_value, bool>::\_\_type std::operator==<char>(std::\_\_cxx11::basic\_string<char,$** |
| **Q5** | **Search1 uses 0.53 seconds per call, total call time is 0 second.**  **This might be because search1 itself consumes a significant runtime, but the functions search1 calls do not contribute significantly to the overall execution time.** |
| **Q6** | **Self seconds per call: 0.00 seconds**  **Total seconds per call: 0.60 seconds**  **This implies that the majority of the time spent in find\_print\_add\_records is due to the functions it calls rather than its own code.** |
| **Q7** | **The total time was 2.40 seconds contributing from the find\_print\_add\_records**  **child function.** |
|  |  |
|  |  |
| **Q10** |  |
|  |  |

**Q8:**

|  |  |
| --- | --- |
| **Optimization Level** | **Total execution time** |
| **O0 (default)** | 3.28 sec |
| **O1** | 2.87 sec |
| **O2** | 1.93 sec |
| **O3** | 1.62 sec |

**Q9:**

|  |  |  |
| --- | --- | --- |
| **Optimization level** | **Search1** | **Sort1** |
| **O1** | **69.7%** | **27.4%** |
| **O2** | **57.2%** | **45.32%** |
| **O3** | **49.1%** | **49.3%** |

**Q11:**

|  |  |  |
| --- | --- | --- |
| **Sort function** | **Search function** | **Total execution time** |
| **Sort1** | Search1 | 3.42 sec |
| **Sort2** | Search1 | 4.58 sec |
| **Sort3** | Search1 | 2.47 sec |
| **Sort1** | Search2 | 0.83 sec |
| **Sort2** | Search2 | 2.76 sec |
| **Sort3** | Search2 | 0.01 sec |

**Q12:**

**Sort3 Search2 has the best performance fin terms of execution time**

**Q13:**

**(3.42 - 0.01)/3.42 = 99% program enhancement percentage.**