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| **Checklist** | | | | | | |
|  | **Item** | **your assignment details** | | | | **Comments** |
| 1 | Names and ID numbers of Group Members | Xuefeng Huo-21012752  Zhaohui Liang-21012755 | | | | (maximum of 3 members in a group) |
| 2 | Operating System used for testing your codes | Windows 10 | | | | e.g. Windows 10/11, MacOS, Ubuntu Linux |
| 3 | Compiler used | gcc 13.1 | | | | Only **gcc 13.1** or **clang 14.0** is allowed |
| 4 | IDE used | Subline Text | | | | (e.g. SublimeText, Visual Studio) |
| 5 | Complete source codes and support files for compilation/linking/execution | **\*.cpp** *files* | | Yes | | You must submit the complete source codes and support files for compilation purposes.  Moreover, your program must compile using the makefile provided. |
| **\*.h** *files* | | Yes | |
| **makefile** | | Yes | |
| **tasks.json** | | No | |
| 6 | Algorithms | uc\_explist | | | full | Indicate ‘**full**’, if you have completed the implementation of an algorithm, or ‘partial’, if you are only submitting a partial implementation. |
| astar\_explist\_manhattan | | | full |
| astar\_explist\_misplacedtiles | | | full |
| 7 | Is your program able to run using the **batch\_run** **all** mode provided? | Yes | | | | Your program must be able to execute in **batch\_run all** mode.  (Indicate ‘**Yes**’ or ‘**No**’ ) |
| 8 | Experiment Results in Excel Worksheet | Yes  (Note: Use your **surname\_forename**.**xlsx** as the name of your Excel file. The name of the worksheet must be changed to **results.**) | | | | * indicate ‘**Yes**’ or ‘**No**’ * you will lose **50%** of your grade if you fail to submit this Excel file |
| 9 | (Maximum of 2 Bonus marks) for Fast and correct execution of all experiments | Yes  UC: Use a min-heap and use hashes to identify expanded nodes  A\*: Minimizing search time in Q Implement unordered map as extended list | | | | a maximum of 2 bonus marks will be awarded if your program can perform all the required experiments correctly (i.e. search.exe batch\_run all) in less than 1 minute. Write the total execution time. |
| Total time of execution of all experiments | UC: 1.548 sec (in seconds)  A\*: 0.299 sec (in seconds) | | |