**Checklist/Other technical details**

Please accomplish the following check list in order to allow for accurate marking of your assignment.

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|  | **Item** | **your assignment details** | | **Comments** |
| 1 | Names and ID numbers of Group Members | Yue Wang 12027710  Qinghua Wang 13189218 | | (maximum of 3 members in a group) |
| 2 | Operating System used for testing your codes | Windows 10 | | Note: your codes must be tested on Windows 10. The graphics engine only works on Windows. |
| 3 | Compiler used | gcc 8.2 | | Note: gcc 8.2 is required |
| 4 | IDE used | Visual Studio 2017 | | (e.g. SublimeText 3, ScITE) |
| 5 | Complete source codes (cpp, h files), makefile | BFS\_NO\_VLIST | Full | Indicate ‘**full**’, if you have completed the implementation of an algorithm, or ‘partial’, if you are only submitting a partial implementation. |
| BFS\_VLIST | Full |
| PDS\_NO\_VLIST | Full |
| UNIFORM COST\_EXP\_LIST | Full |
| ASTAR\_EXP\_LIST MISPLACED TILES HEURISTIC | Full |
| ASTAR\_EXP\_LIST MANHATTAN DISTANCE HEURISTIC | Full |
| 6 | Is your program able to run with the 2 batch files given? | Yes | | indicate ‘**Yes**’ or ‘**No**’ (batch files: run\_all.bat, run\_one.bat) |
| 7 | Experiment Results in Excel Worksheet | Yes | | indicate ‘**Yes**’ or ‘**No**’ |
| 8 | Extra work (Bonus): Enhancements/Optimisations included | Yes   1. Original hash function for expanded/visited list. 2. Original heap that allows delete element inside and keeps priority queue properties. | | (e.g. original implementation of the Heaps data structure used to represent the priority Q in the A\* algorithm) |