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CS 156 SPRING 2021

Professor Sanjoy Paul

Homework 5

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SJSU.txt** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 52 | 434 | 551 | 0.0079 |
| **Simple heuristic** | 52 | 434 | 512 | 0.0077 |
| **Better heuristic (optional)** | 52 | 434 | 250 | 0.0048 |
| **Gen heuristic (optional)** | 52 | 434 | 88 | 0.0014 |
| **QUEST A** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 17 | 178 | 93 | 0.0012 |
| **Simple heuristic** | 17 | 178 | 88 | 0.0013 |
| **Better heuristic (optional)** | 17 | 178 | 38 | 0.0006 |
| **Gen heuristic (optional)** | 17 | 178 | 38 | 0.0007 |
| **QUEST B** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 116 | 886 | 408628 | 14.5184 |
| **Simple heuristic** | 116 | 886 | 397356 | 15.3593 |
| **Better heuristic (optional)** | 116 | 886 | 291058 | 10.4744 |
| **Gen heuristic (optional)** | 113 | 893 | 2552 | 0.0724 |
|  |  |  |  |  |
| **QUEST C** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 48 | 554 | 308 | 0.0032 |
| **Simple heuristic** | 48 | 554 | 296 | 0.0034 |
| **Better heuristic (optional)** | 48 | 554 | 117 | 0.0017 |
| **Gen heuristic (optional)** | 48 | 554 | 99 | 0.0016 |
| **QUEST D** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 31 | 452 | 1275 | 0.0213 |
| **Simple heuristic** | 31 | 452 | 1248 | 0.021 |
| **Better heuristic (optional)** | 31 | 452 | 363 | 0.0082 |
| **Gen heuristic (optional)** | 48 | 480 | 76 | 0.0017 |
|  |  |  |  |  |
| **QUEST E** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 12 | 144 | 383 | 0.0061 |
| **Simple heuristic** | 12 | 144 | 353 | 0.0059 |
| **Better heuristic (optional)** | 12 | 144 | 22 | 0.0004 |
| **Gen heuristic (optional)** | 12 | 144 | 22 | 0.0004 |
| **QUEST F** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 75 | 453 | 73100 | 1.7691 |
| **Simple heuristic** | 75 | 453 | 68037 | 1.6826 |
| **Better heuristic (optional)** | 75 | 453 | 32250 | 0.7755 |
| **Gen heuristic (optional)** | 83 | 517 | 7244 | 0.2299 |
| **QUEST G** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 96 | 579 | 2412853 | 192.8528 |
| **Simple heuristic** | 96 | 579 | 2246779 | 187.6238 |
| **Better heuristic (optional)** | 96 | 579 | 1140453 | 83.3046 |
| **Gen heuristic (optional)** | 112 | 707 | 65854 | 4.0757 |
| **QUEST H** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 40 | 296 | 1045 | 0.0144 |
| **Simple heuristic** | 40 | 296 | 1003 | 0.0144 |
| **Better heuristic (optional)** | 40 | 296 | 648 | 0.012 |
| **Gen heuristic (optional)** | 52 | 378 | 320 | 0.0072 |
| **QUEST L** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | 47 | 299 | 2915 | 0.0549 |
| **Simple heuristic** | 47 | 299 | 2634 | 0.0497 |
| **Better heuristic (optional)** | 47 | 299 | 363 | 0.0107 |
| **Gen heuristic (optional)** | 49 | 315 | 49 | 0.0014 |
| **NOWAY** | | | | |
|  | **PATH LENGTH** | **COST** | **NUMBER OF EXPANED** | **PROCESSING TIME** |
| **Null heuristic** | fail | fail | 38 | 0.0013 |
| **Simple heuristic** | fail | fail | 78 | 0.0013 |
| **Better heuristic (optional)** | fail | fail | 78 | 0.0013 |
| **Gen heuristic (optional)** | fail | fail | 78 | 0.0015 |

**Are there cases where some of the heuristics (B), (C) or (D) performed better than (A) and why do you think it happened?**

* Single heuristic is heuristic used with A\* to find manhattan distance from single medal. Running A\* with this single heuristic, give us better performance than uniform cost search.
* Heuristic used with A\* to find Manhattan distance \* action cost from single medal Running A\* with this better heuristic, gives us better performance than A\* with single\_heuristic.
* General heuristic takes the better heuristic of every medal and adds it to a list, where it is compared to other heuristics.
* For most of case we can see there are significiation reduce of number of expanded and processing time compare between Null heuristic, Simple heuristic, Better heuristic and General heuristic.

**Noway.txt**

**Text

Description automatically generated**

|  |
| --- |
| **Null heuristic**  **A picture containing graphical user interface  Description automatically generated** |
| **Simple heuristic**  **A picture containing graphical user interface  Description automatically generated** |
| **Better heuristi(optional)** |
| **A picture containing graphical user interface  Description automatically generated** |
| **Gen heuristic (optional)** |

**A picture containing graphical user interface

Description automatically generated**

**QUEST A.txt**

**Text

Description automatically generated**

|  |
| --- |
| **Null heuristic**  **A screenshot of a computer  Description automatically generated with medium confidence** |
| **Simple heuristic**  **A screenshot of a computer  Description automatically generated with medium confidence** |
| **Better heuristi(optional)** |
| **A screenshot of a computer  Description automatically generated with medium confidence** |
| **Gen heuristic (optional)** |
| **A screenshot of a computer  Description automatically generated with medium confidence**  **QUEST B.txt**  **Text  Description automatically generated**   |  | | --- | | **Null heuristic**  **A picture containing text, clock  Description automatically generated** | | **Simple heuristic**  **A picture containing text, clock  Description automatically generated** | | **Better heuristi(optional)** | | **A screenshot of a computer  Description automatically generated with medium confidence** | | **Gen heuristic (optional)** | |
|  |
| **A screen shot of a computer  Description automatically generated with low confidence**  **QUEST C.txt**  **Text  Description automatically generated**   |  | | --- | | **Null heuristic**  **A screenshot of a video game  Description automatically generated with medium confidence** | | **Simple heuristic**  **A screenshot of a video game  Description automatically generated with medium confidence** | | **Better heuristi(optional)**  **A screenshot of a video game  Description automatically generated with medium confidence** | | **Gen heuristic (optional)** | |
| **A screenshot of a video game  Description automatically generated with medium confidence** |
|  |

**QUEST D.txt**

**Text

Description automatically generated**

|  |
| --- |
| **Null heuristic**  **A picture containing shape  Description automatically generated** |
| **Simple heuristic**  **A picture containing shape  Description automatically generated** |
| **Better heuristi(optional)**  **A picture containing graphical user interface  Description automatically generated** |
| **Gen heuristic (optional)** |
| **A picture containing shape  Description automatically generated**  **QUEST E.txt**  **Text  Description automatically generated**   |  | | --- | | **Null heuristic**  **A screenshot of a computer  Description automatically generated with medium confidence** | | **Simple heuristic**  **A screenshot of a computer  Description automatically generated with medium confidence** | | **Better heuristi(optional)**  **A screenshot of a computer  Description automatically generated with medium confidence** | | **Gen heuristic (optional)** | |

**A screenshot of a computer

Description automatically generated with medium confidence**

**QUEST F.txt**

**Text

Description automatically generated**

|  |
| --- |
| **Null heuristic**  **A picture containing text, wall, black, clock  Description automatically generated** |
| **Simple heuristic**  **A picture containing text, wall, black, clock  Description automatically generated** |
| **Better heuristi(optional)**  **A picture containing text, wall, black, clock  Description automatically generated** |
| **Gen heuristic (optional)** |
| **A screenshot of a computer  Description automatically generated with medium confidence**  **QUEST G.txt**    **Text  Description automatically generated**   |  | | --- | | **Text  Description automatically generated Text  Description automatically generated**  **A picture containing text, wall, clock, black  Description automatically generated** | | **Simple heuristic**  **A picture containing text, black, clock  Description automatically generated** | | **Better heuristi(optional)**  **A picture containing text, wall, clock, black  Description automatically generated** | | **Gen heuristic (optional)** | |
|  |
|  |

A picture containing text, wall, clock, black

Description automatically generated

**QUEST H .txt**

**Text

Description automatically generated**

|  |
| --- |
| **Null heuristic**  **Graphical user interface  Description automatically generated** |
| **Simple heuristic**  **Graphical user interface  Description automatically generated** |
| **Better heuristi(optional)**  **Graphical user interface  Description automatically generated** |
| **Gen heuristic (optional)** |
| **A screenshot of a computer  Description automatically generated with medium confidence**  **QUEST L .txt**  **Text  Description automatically generated**   |  | | --- | | **Null heuristic**  **Graphical user interface, application  Description automatically generated** | | **Simple heuristic**  **A picture containing graphical user interface  Description automatically generated** | | **Better heuristi(optional)**  **A picture containing graphical user interface  Description automatically generated** | | **Gen heuristic (optional)**  **Graphical user interface  Description automatically generated with low confidence** | |

**SJSU.txt**

**Text

Description automatically generated**

|  |
| --- |
| **Null heuristic**  **A screenshot of a computer  Description automatically generated with medium confidence** |
| **Simple heuristic**  **A picture containing text, wall, indoor, black  Description automatically generated** |
| **Better heuristi(optional)**  **A picture containing text, wall, indoor, black  Description automatically generated** |
| **Gen heuristic (optional)** |

A picture containing text, wall, indoor, black

Description automatically generated