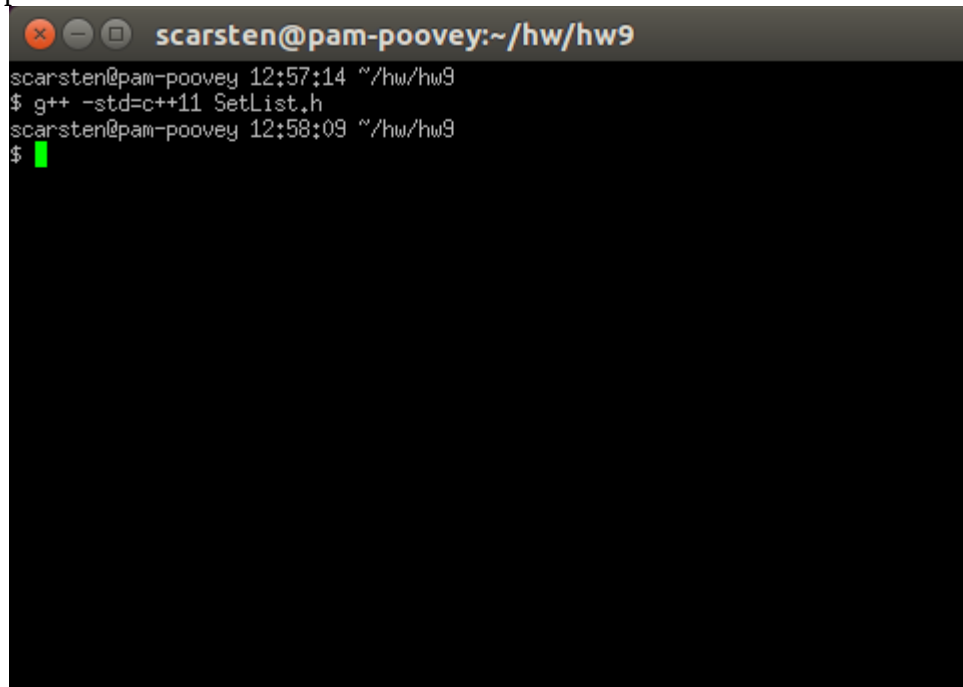


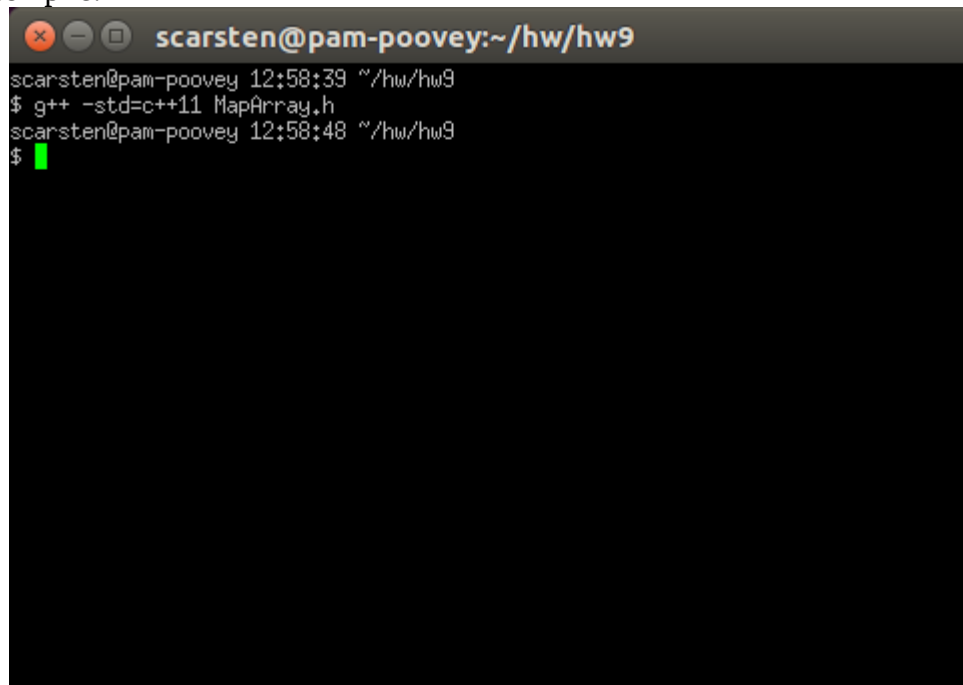
Hw9 Report

SetList.h compile:

A terminal window with a dark background and a title bar that reads "scarsten@pam-poovey:~/hw/hw9". The terminal shows the following commands and output:

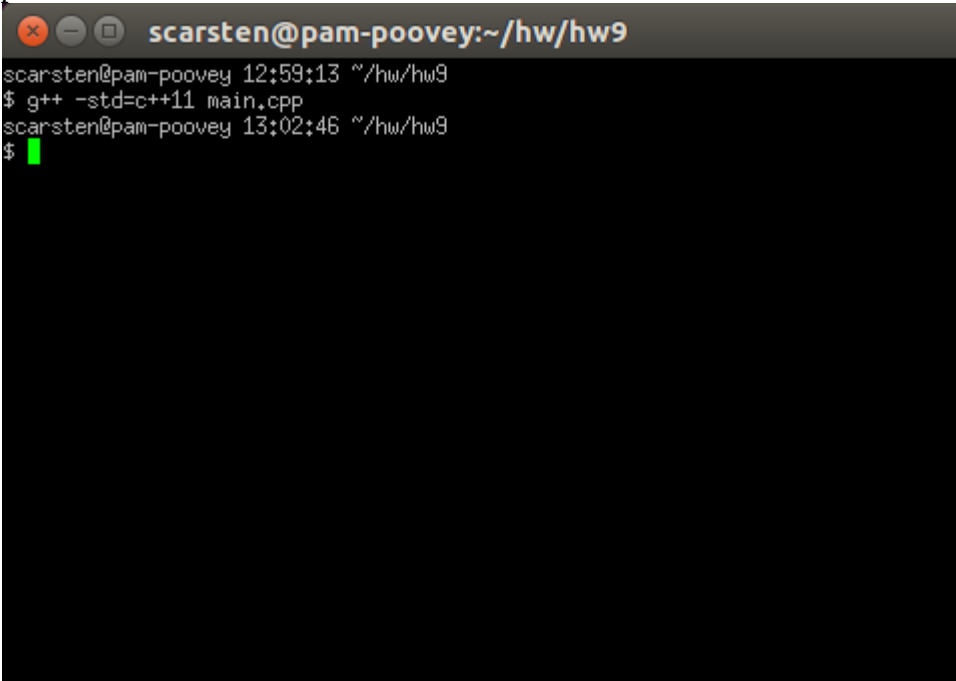
```
scarsten@pam-poovey 12:57:14 ~/hw/hw9
$ g++ -std=c++11 SetList.h
scarsten@pam-poovey 12:58:09 ~/hw/hw9
$
```

MapArray.h compile:

A terminal window with a dark background and a title bar that reads "scarsten@pam-poovey:~/hw/hw9". The terminal shows the following commands and output:

```
scarsten@pam-poovey 12:58:39 ~/hw/hw9
$ g++ -std=c++11 MapArray.h
scarsten@pam-poovey 12:58:48 ~/hw/hw9
$
```

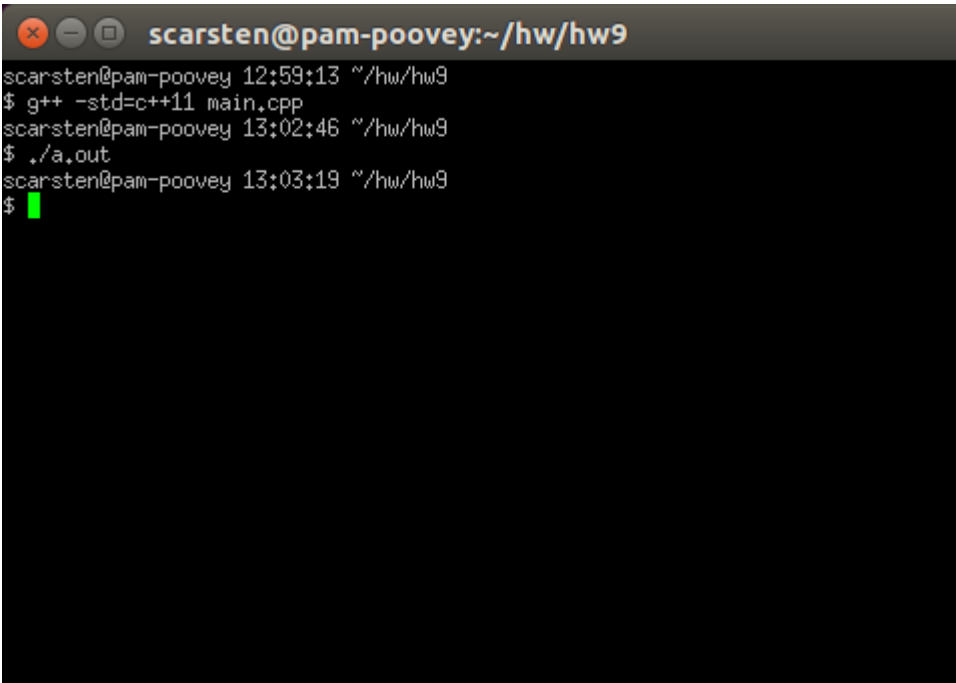
main.cpp compile:

A terminal window titled "scarsten@pam-poovey:~/hw/hw9" with standard window controls. The terminal shows the following commands and timestamps:

```
scarsten@pam-poovey 12:59:13 ~/hw/hw9
$ g++ -std=c++11 main.cpp
scarsten@pam-poovey 13:02:46 ~/hw/hw9
$
```

A green cursor is visible on the line following the last prompt.

main.cpp run:

A terminal window titled "scarsten@pam-poovey:~/hw/hw9" with standard window controls. The terminal shows the following commands and timestamps:

```
scarsten@pam-poovey 12:59:13 ~/hw/hw9
$ g++ -std=c++11 main.cpp
scarsten@pam-poovey 13:02:46 ~/hw/hw9
$ ./a.out
scarsten@pam-poovey 13:03:19 ~/hw/hw9
$
```

A green cursor is visible on the line following the last prompt.

frequency.txt file:

| | |
|---------------|---|
| abacus | 1 |
| abbreviations | 1 |
| abstract | 2 |
| abstracted | 2 |
| abstraction | 1 |
| accredited | 1 |
| acknowledges | 1 |
| act | 1 |
| action | 1 |
| actionscript | 1 |
| activities | 1 |
| actual | 1 |
| ad | 1 |
| ada | 1 |
| adacore | 1 |
| adaptations | 1 |
| add | 1 |
| addition | 1 |
| addresses | 1 |
| adopted | 1 |
| affects | 1 |
| air | 1 |
| al-jazari | 1 |
| algebra1 | |
| algorithms | 4 |
| allow | 1 |
| allowed | 5 |
| allows | 1 |
| along | 1 |
| also | 2 |
| although | 1 |
| analogous | 1 |
| analysis | 1 |
| analytical | 2 |
| ancient2 | |
| another | 1 |
| antikythera | 1 |
| application | 2 |
| applications | 2 |
| architecture | 1 |
| areas | 2 |
| arithmetic | 1 |
| around | 2 |
| art | 1 |
| artifacts | 1 |
| assembly | 6 |
| automata | 1 |
| automate | 1 |

| | |
|---------------|---|
| babbage | 1 |
| basic | 1 |
| bc | 2 |
| became | 2 |
| become | 1 |
| becoming | 1 |
| beginning | 1 |
| bernoulli | 1 |
| besides | 1 |
| beyond | 2 |
| binary | 1 |
| build | 1 |
| building | 1 |
| built | 1 |
| c | 3 |
| calculate | 1 |
| calculating | 1 |
| calculation | 1 |
| calculations | 2 |
| calculator | 1 |
| calculators | 1 |
| calculus | 1 |
| calendars | 1 |
| call | 1 |
| called | 1 |
| cams | 1 |
| card | 3 |
| cards | 8 |
| career | 2 |
| cases | 1 |
| certification | 1 |
| challenges | 1 |
| changes | 1 |
| charles | 1 |
| china | 1 |
| circa | 1 |
| clearance | 1 |
| cloth | 1 |
| cobol | 1 |
| code | 6 |
| coding | 2 |
| cognitive | 1 |
| combines | 1 |
| commercial | 1 |
| commonly | 1 |
| community | 1 |
| company | 1 |
| compiler | 1 |
| complicated | 1 |

| | |
|---------------|----|
| computation | 1 |
| computational | 1 |
| compute | 1 |
| computer | 11 |
| computers | 3 |
| computing | 2 |
| conceive | 1 |
| conception | 1 |
| condition | 1 |
| configuration | 1 |
| considerably | 1 |
| considered | 2 |
| consistent | 1 |
| consumption | 1 |
| control | 4 |
| convenient | 1 |
| converted | 1 |
| core | 1 |
| corrections | 1 |
| correctness | 1 |
| cost | 1 |
| countries | 3 |
| covers | 1 |
| craft | 1 |
| crafted | 1 |
| created | 1 |
| criteria | 1 |
| critical | 1 |
| cultures | 1 |
| cycle | 1 |
| data | 4 |
| dates | 1 |
| debatable | 1 |
| debate | 3 |
| debugging | 1 |
| decisions | 1 |
| defined | 1 |
| derived | 1 |
| design | 1 |
| develop | 1 |
| developed | 7 |
| developing | 1 |
| development | 5 |
| device | 2 |
| devices | 2 |
| devising | 1 |
| different | 10 |
| differs | 1 |
| directly | 2 |

| | |
|--------------|---|
| discarded | 1 |
| discipline | 4 |
| domain | 1 |
| dozens | 1 |
| drive | 1 |
| drum | 2 |
| drummer | 1 |
| due | 1 |
| early | 1 |
| easier | 1 |
| easily | 1 |
| easy | 1 |
| economic | 1 |
| editors | 1 |
| efficient | 2 |
| efficiently | 1 |
| eg | 4 |
| elementary | 1 |
| elements | 1 |
| employed | 1 |
| engine | 5 |
| engineer | 1 |
| engineering | 4 |
| engineers | 1 |
| enough | 1 |
| entered | 1 |
| entering | 3 |
| entirely | 1 |
| entities | 1 |
| environments | 1 |
| era | 2 |
| error | 2 |
| europe | 1 |
| even | 1 |
| every | 1 |
| evolvable | 2 |
| executable | 1 |
| exhaustion | 1 |
| existed | 1 |
| expertise | 1 |
| expressed | 1 |
| extent | 2 |
| fact | 1 |
| faster | 1 |
| final | 1 |
| find | 1 |
| first | 4 |
| follow | 1 |
| force | 1 |

| | | |
|----------------|---|--|
| form | 3 | |
| formal | 1 | |
| format | 1 | |
| forms | 1 | |
| formula | 2 | |
| formulation | 1 | |
| fortran | 3 | |
| found | 1 | |
| foundation | 2 | |
| founded | 1 | |
| functional | 1 | |
| fundamental | 1 | |
| gears | 1 | |
| general3 | | |
| generating | 1 | |
| geometry | 1 | |
| giant | 1 | |
| given | 1 | |
| goal | 1 | |
| good | 1 | |
| governmentally | 1 | |
| greater | 1 | |
| greece | 1 | |
| habitual | 1 | |
| hardware | 2 | |
| haskell | 1 | |
| herman | 1 | |
| high | 2 | |
| high-level | 3 | |
| higher | 1 | |
| history | 1 | |
| hole | 1 | |
| holes | 1 | |
| hollerith | 2 | |
| however | 2 | |
| human | 2 | |
| humans | 1 | |
| hypothesis | 1 | |
| ibm | 3 | |
| idea | 1 | |
| ie | 1 | |
| illegal | 1 | |
| implementation | 5 | |
| importing | 1 | |
| impractical | 1 | |
| include3 | | |
| including | 3 | |
| increase | 1 | |
| increasing | 1 | |

| | |
|--------------|----|
| increasingly | 2 |
| incur | 1 |
| india | 1 |
| industry | 1 |
| inexpensive | 1 |
| influences | 1 |
| initial | 1 |
| input | 1 |
| instead | 1 |
| institution | 1 |
| instruction | 2 |
| instructions | 7 |
| instruments | 2 |
| intent | 1 |
| invented | 5 |
| invention | 1 |
| inventions | 1 |
| involves | 1 |
| jacquard | 3 |
| japan | 1 |
| java | 1 |
| javascript | 1 |
| jobs | 1 |
| joseph | 1 |
| just | 1 |
| keypunch | 1 |
| knowledge | 1 |
| known | 2 |
| kurdish | 1 |
| labor | 1 |
| language | 16 |
| languages | 11 |
| larger | 1 |
| late | 2 |
| later | 3 |
| leads | 1 |
| leaps | 1 |
| learn | 1 |
| led | 1 |
| less | 3 |
| let | 1 |
| level | 2 |
| levers | 1 |
| license | 1 |
| licensed | 1 |
| licensing | 1 |
| likely | 1 |
| linguistics | 1 |
| list | 1 |

| | |
|----------------|----|
| lists | 1 |
| little | 1 |
| locations | 1 |
| logic | 1 |
| loom | 3 |
| looms | 1 |
| lovelace | 1 |
| low-level | 1 |
| lower | 1 |
| lunar-to-solar | 1 |
| machine | 10 |
| machines | 4 |
| made | 3 |
| maintaining | 1 |
| making | 1 |
| management | 1 |
| manner | 1 |
| many | 5 |
| marie | 1 |
| mathematician | 1 |
| maximum | 1 |
| may | 2 |
| meant | 1 |
| measured | 1 |
| mechanical | 2 |
| mechanism | 2 |
| mechanisms | 1 |
| mechanized | 1 |
| media | 1 |
| medieval | 1 |
| medium | 1 |
| memory | 1 |
| method | 1 |
| metonic | 1 |
| might | 2 |
| model | 1 |
| modern | 4 |
| mostly | 1 |
| much | 3 |
| musical | 1 |
| mutual | 1 |
| name | 1 |
| nature | 1 |
| necessary | 1 |
| need | 1 |
| neumann | 1 |
| new | 1 |
| notation | 3 |
| number | 2 |

| | |
|---------------|---|
| numbers | 2 |
| numerical | 2 |
| objective-c | 1 |
| objects | 1 |
| occasionally | 1 |
| often | 4 |
| olympiads | 1 |
| one | 4 |
| oneself | 1 |
| ongoing | 2 |
| operated | 1 |
| operating | 1 |
| operation | 2 |
| operations | 3 |
| opportunities | 1 |
| opposed | 1 |
| order | 1 |
| organize | 1 |
| original | 2 |
| output | 2 |
| outsourcing | 1 |
| overhead | 1 |
| painstakingly | 1 |
| panel | 1 |
| panels | 1 |
| paper | 3 |
| part | 1 |
| particular | 2 |
| particularly | 2 |
| parts | 1 |
| pass | 1 |
| past | 1 |
| pasteboard | 1 |
| pattern | 2 |
| patterns | 3 |
| pegs | 1 |
| percussion | 1 |
| perfectly | 1 |
| perform | 1 |
| performing | 1 |
| perl | 1 |
| phase | 1 |
| php | 1 |
| physically | 1 |
| placed | 1 |
| playing | 1 |
| plugboard | 1 |
| popular | 2 |
| possibility | 1 |

| | |
|---------------|----|
| postulates | 1 |
| power | 1 |
| practical | 1 |
| practices | 1 |
| predetermined | 1 |
| prior | 1 |
| problem | 2 |
| process | 6 |
| processing | 3 |
| produce | 2 |
| producing | 1 |
| profession | 1 |
| professional | 1 |
| professions | 1 |
| program | 6 |
| programmable | 2 |
| programmed | 1 |
| programmer | 4 |
| programmers | 5 |
| programming | 24 |
| programs | 10 |
| progressed | 1 |
| prone | 1 |
| punch | 1 |
| punched | 7 |
| punching | 1 |
| purpose | 1 |
| python | 1 |
| read | 1 |
| readable | 1 |
| rebuilt | 1 |
| record | 2 |
| recording | 1 |
| referred | 1 |
| regarded | 1 |
| regulated | 1 |
| related | 1 |
| relations | 1 |
| relatively | 1 |
| replace | 1 |
| represented | 1 |
| representing | 2 |
| require | 1 |
| required | 1 |
| requirements | 1 |
| requires | 1 |
| reserved | 1 |
| resources | 1 |
| rhythms | 1 |

| | |
|---------------|---|
| ruby | 1 |
| s | 3 |
| sapirwhorf | 1 |
| science2 | |
| scientist | 1 |
| security | 1 |
| see | 1 |
| seemed | 1 |
| self-governed | 1 |
| sequence | 3 |
| sequentially | 1 |
| series | 1 |
| services | 1 |
| sets | 2 |
| settled | 1 |
| several | 1 |
| shortened | 1 |
| sizes | 1 |
| small | 1 |
| smalltalk | 1 |
| software | 9 |
| solution | 1 |
| solving1 | |
| sometimes | 1 |
| sorter | 1 |
| source | 5 |
| speaker | 1 |
| speakers | 1 |
| special | 1 |
| specialized | 1 |
| specific | 2 |
| specified | 1 |
| specify2 | |
| specifying | 1 |
| speed | 2 |
| spoken | 1 |
| sql | 1 |
| standardized | 1 |
| stands | 1 |
| states | 2 |
| still | 3 |
| storage | 1 |
| stored | 1 |
| strict | 1 |
| subject | 1 |
| subjects | 1 |
| sumeria | 1 |
| surrounding | 1 |
| susceptible | 1 |

| | |
|---------------|---|
| symbolic | 1 |
| symbols | 1 |
| synthesis | 1 |
| system | 2 |
| systems | 1 |
| tabulating | 1 |
| tabulator | 2 |
| takes | 1 |
| tape | 2 |
| target | 1 |
| task | 2 |
| tasks | 1 |
| technical | 1 |
| techniques | 1 |
| term | 2 |
| terminals | 1 |
| terms | 2 |
| testing | 1 |
| tests | 1 |
| text | 3 |
| theorized | 1 |
| things | 1 |
| thought | 2 |
| thoughts | 1 |
| three | 1 |
| thus | 2 |
| time | 2 |
| total | 1 |
| tracked | 1 |
| translates | 1 |
| translation | 1 |
| trials | 1 |
| trigger | 1 |
| turn | 1 |
| two | 1 |
| type | 1 |
| typically | 1 |
| typing | 1 |
| underlying | 1 |
| understanding | 1 |
| unit | 2 |
| united | 2 |
| upon | 1 |
| use | 5 |
| used | 3 |
| uses | 2 |
| using | 5 |
| usually | 4 |
| utilizing | 1 |

| | | |
|--------------|---|--|
| various | 2 | |
| vary | 1 | |
| verification | 1 | |
| visual | 1 | |
| vital | 1 | |
| von | 1 | |
| wage | 1 | |
| way | 1 | |
| weaves | 1 | |
| weaving | 1 | |
| well | 1 | |
| whether | 1 | |
| whole | 1 | |
| whose | 2 | |
| widely-used | 1 | |
| will | 1 | |
| within | 1 | |
| without | 2 | |
| wooden | 1 | |
| world | 3 | |
| worlds | 1 | |
| write | 1 | |
| writing | 3 | |
| written | 1 | |
| wrote | 1 | |
| x | 3 | |
| y | 1 | |
| yield | 1 | |