

HW9 REPORT:

MAIN

```
alvinvn@burt-reynolds:~/hw/hw9
alvinvn@burt-reynolds 03:31:14 ~/hw/hw9
$ g++ -std=c++11 main.cpp -o test1
alvinvn@burt-reynolds 03:32:09 ~/hw/hw9
$ test1
alvinvn@burt-reynolds 03:32:10 ~/hw/hw9
$
```

VALGRIND MAIN

```
alvinvn@burt-reynolds:~/hw/hw9
$ test1
alvinvn@burt-reynolds 03:32:10 ~/hw/hw9
$ valgrind test1
==24112== Memcheck, a memory error detector
==24112== Copyright (C) 2002-2013, and GNU GPL'd, by Julian Seward et al.
==24112== Using Valgrind-3.10.0 and LibVEX; rerun with -h for copyright info
==24112== Command: test1
==24112==
==24112== HEAP SUMMARY:
==24112==    in use at exit: 72,704 bytes in 1 blocks
==24112==   total heap usage: 815 allocs, 814 frees, 155,768 bytes allocated
==24112==
==24112== LEAK SUMMARY:
==24112==    definitely lost: 0 bytes in 0 blocks
==24112==    indirectly lost: 0 bytes in 0 blocks
==24112==    possibly lost: 0 bytes in 0 blocks
==24112==    still reachable: 72,704 bytes in 1 blocks
==24112==         suppressed: 0 bytes in 0 blocks
==24112== Rerun with --leak-check=full to see details of leaked memory
==24112==
==24112== For counts of detected and suppressed errors, rerun with: -v
==24112== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 1 from 1)
alvinvn@burt-reynolds 03:35:26 ~/hw/hw9
$
```

FREQUENCY.TXT:

abacus: 1
abbreviations: 1
above: 1
abstract: 2
abstracted: 2
abstraction: 1
accredited: 1
acknowledges: 1
act: 1
action: 1
actions: 1
activities: 1
actual: 1
ad: 1
ada: 1
adacore: 1
adaptations: 1
add: 1
addition: 1
addresses: 1
adopted: 1
affects: 1
after: 1
air: 1
al-jazari: 1
algebra: 1
algorithms: 4
all: 1
allow: 1
allowed: 5
allows: 1
along: 1
also: 2
although: 1
an: 9
analogous: 1
analysis: 1
analytical: 2
ancient: 2
and: 36
another: 1
antikythera: 1
any: 4
application: 2
applications: 2
architecture: 1
are: 5
areas: 2
arithmetic: 1
around: 2
art: 1
artifacts: 1
as: 15
assembly: 6
at: 4
automata: 1

Line: 1/633	Column: 1	Character: 97 (0x61)	Encoding: 1252 (ANSI - La
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automata: 1
automate: 1
babbage: 1
basic: 1
bc: 2
be: 12
became: 2
because: 3
become: 1
becoming: 1
been: 2
beginning: 1
bernoulli: 1
besides: 1
beyond: 2
binary: 1
build: 1
building: 1
built: 1
but: 2
by: 7
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

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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
could: 5
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
do: 3
domain: 1
dozens: 1

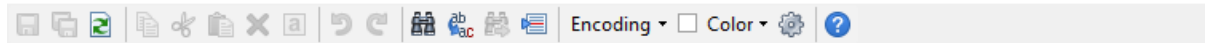
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```
drive: 1
drum: 2
drummer: 1
due: 1
each: 2
early: 1
easier: 1
easily: 1
easy: 1
economic: 1
editors: 1
efficient: 2
efficiently: 1
eg: 4
elementary: 1
elements: 1
employed: 1
engine: 5
engineer: 1
engineering: 4
engineers: 1
enough: 1
entered: 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
few: 1
final: 1
find: 1
first: 4
follow: 1
for: 15
force: 1
form: 3
formal: 1
format: 1
forms: 1
formula: 2
formulation: 1
fortran: 3
found: 1
```

Line: 1/633	Column: 1	Character: 97 (0x61)	Encoding: 1252 (ANSI - La
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general: 3
generating: 1
geometry: 1
giant: 1
given: 1
goal: 1
good: 1
governmentally: 1
greater: 1
greece: 1
habitual: 1
had: 4
hardware: 2
has: 3
haskell: 1
have: 6
having: 1
he: 3
herman: 1
high: 2
high-level: 3
higher: 1
his: 2
history: 1
hole: 1
holes: 1
hollerith: 2
how: 1
however: 2
human: 2
humans: 1
hypothesis: 1
i: 1
ibm: 3
idea: 1
ie: 1
illegal: 1
implementation: 5
importing: 1
impractical: 1
in: 43
include: 3
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

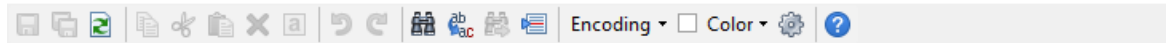
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japan: 1
java: 1
javascript: 1
jobs: 1
joseph: 1
just: 1
keypunch: 1
knowledge: 1
known: 2
kurdish: 1
labor: 1
language: 16
languages: 11
larger: 1
late: 2
later: 3
leads: 1
leaps: 1
learn: 1
led: 1
less: 3
let: 1
level: 2
levers: 1
license: 1
licensed: 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

nature: 1
necessary: 1
need: 1
neumann: 1
new: 1
no: 1
not: 3
notation: 3
number: 2
numbers: 2
numerical: 2
objective-c: 1
objects: 1
occasionally: 1
of: 63
often: 4
olympiads: 1
on: 4
one: 4
oneself: 1
ongoing: 2
only: 1
operated: 1
operating: 1
operation: 2
operations: 3
opportunities: 1
opposed: 1
or: 11
order: 1
organize: 1
original: 2
other: 4
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

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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

security: 1
see: 1
seemed: 1
self-governed: 1
sequence: 3
sequentially: 1
series: 1
services: 1
sets: 2
settled: 1
several: 1
she: 1
shortened: 1
should: 1
sizes: 1
small: 1
smalltalk: 1
software: 9
solution: 1
solving: 1
some: 4
sometimes: 1
sorter: 1
source: 5
speaker: 1
speakers: 1
special: 1
specialized: 1
specific: 2
specified: 1
specify: 2
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
such: 6
sumeria: 1
surrounding: 1
susceptible: 1
symbolic: 1
symbols: 1
synthesis: 1
system: 2
systems: 1
tabulating: 1
tabulator: 2
takes: 1

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term: 2
terminals: 1
terms: 2
testing: 1
tests: 1
text: 3
than: 6
that: 20
the: 97
their: 1
them: 1
themselves: 1
then: 1
theorized: 1
there: 2
these: 8
things: 1
this: 4
those: 2
thought: 2
thoughts: 1
three: 1
thus: 2
time: 2
to: 39
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
very: 2
visual: 1
vital: 1
von: 1
wage: 1
was: 5

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translation: 1
trials: 1
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utilizing: 1
various: 2
vary: 1
verification: 1
very: 2
visual: 1
vital: 1
von: 1
wage: 1
was: 5
way: 1
weaves: 1
weaving: 1
well: 1
were: 8
where: 2
whether: 1
which: 13
while: 1
whole: 1
whose: 2
widely-used: 1
will: 1
with: 11
within: 1
without: 2
wooden: 1
world: 3
worlds: 1
would: 2
write: 1
writing: 3
written: 1
wrote: 1
x: 3
y: 1
yield: 1