

## Assignment 3

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### Linear relationship between quad space and linear space runtime:

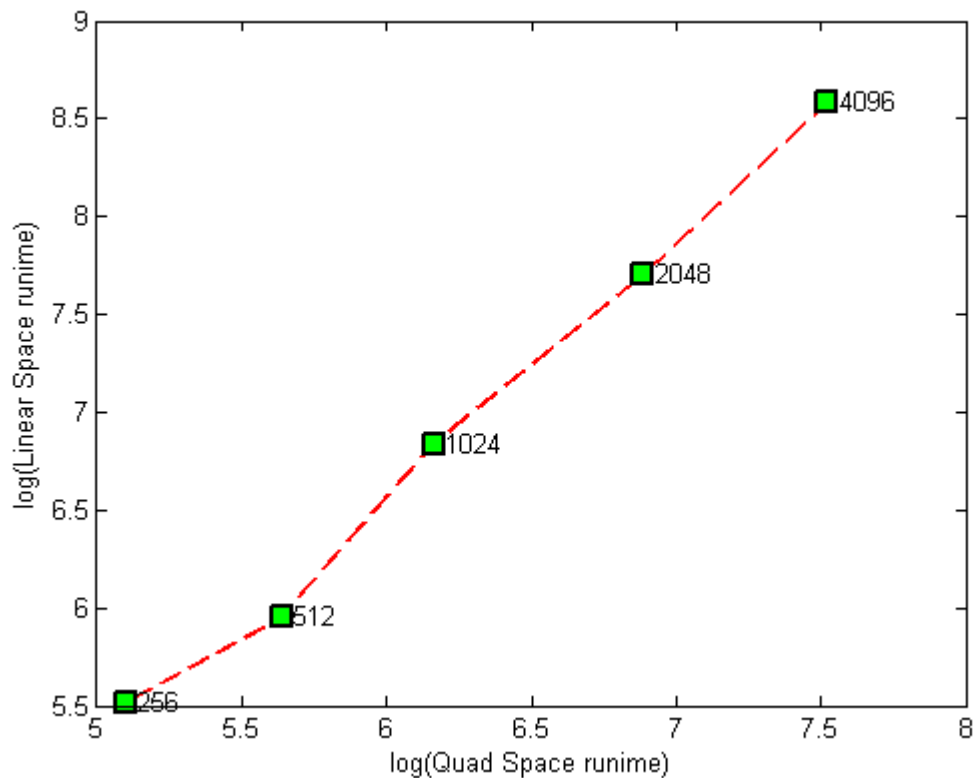
#### What is the significance of the slope of the line?

It shows the slope of linear relationship between them. This linear relationship follow a linear equation  $aX+b = 0$  which  $a$  is the slope of the equation. The slope ( $a$ ) demonstrate that linear space algorithm take a times more longer than quad space algorithm.

#### What is the significance of the offset of the line?

It shows that there is always a constant difference in addition to the linear relationship.

### log/log scatter plot



```
Output
Debugger Console GlobalAlignment (run)
run:
Compare 5 pairs of strings of 20 characters

1st pair:

Quad Space:
GCGCGTGCGCGGAAGG-AG--CC
GA-CTTGT--GGAACCTACTTCC

Linear Space:
GCGCGTGCG-C-G-GAAGGAGCC
GA-CTTG-T-G-GAACCTACTTCC

2nd pair:

Quad Space:
AAGGTGAAG-TTGTAG-CAGTG
AAAAT-AACCTTCT-GTCC-T-

Linear Space:
A-AGGTGAAGTTGTAGCAGTG
TG-AAA-A-T-A-ACCTTCTGTCC-T

3rd pair:

Quad Space:
T---G-TCAGAAG-AGGTGCGTGGC
CCGAGCTCTCC-GCACC--CGT-G-

Linear Space:
TGTGAGAAGAGG-T-G-C-GTGGC
C-C-GAGCTCTCCGCACCCGT-G
```

Output

Debugger Console GlobalAlignment (run)

```
3rd pair:

Quad Space:
T---G-TCAGAAG-AGGTGCGTGGC
CCGAGCTCTCC-GCACC--CGT-G-

Linear Space:
TGTCAGAAGAGG-T-G-C-GTGGC
C-C-GAGCTCTCCGCACCCGT-G

4nd pair:

Quad Space:
AAGGTGAAGTT-GTAGCAGTG
CCGA-GCTCTCCGCACCCGTG

Linear Space:
AAGGTGAAG-T-TGT-AGCAGTG
CC-GAG-C-T-C-TCCGCACCCGTG

5rd pair:

Quad Space:
GTCA-GAAGAGG-TGCGTGGC
GACTTGTGGAACCTACTTC-C

Linear Space:
TGTC-A-G-AAGAGG-T-G-CGTGGC
GA-CTTGTG-GAACCTACTTCC
BUILD SUCCESSFUL (total time: 0 seconds)
```