CSE 225: Data Structures and Algorithms

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Department of Electrical and Computer Engineering

North South University

Introduction

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- Kindly introduce yourself.

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  - **Classes & Objects**
  - Inheritance
  - Polymorphism etc...

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- Dynamic Programming (DP)
- Dynamic Memory Allocation

About the Course

- Course Code: CSE 225
- Course Title: Data Structures and Algorithms
- Section: 1, 2
- For class time and consultation hour, check the course outline.

Books

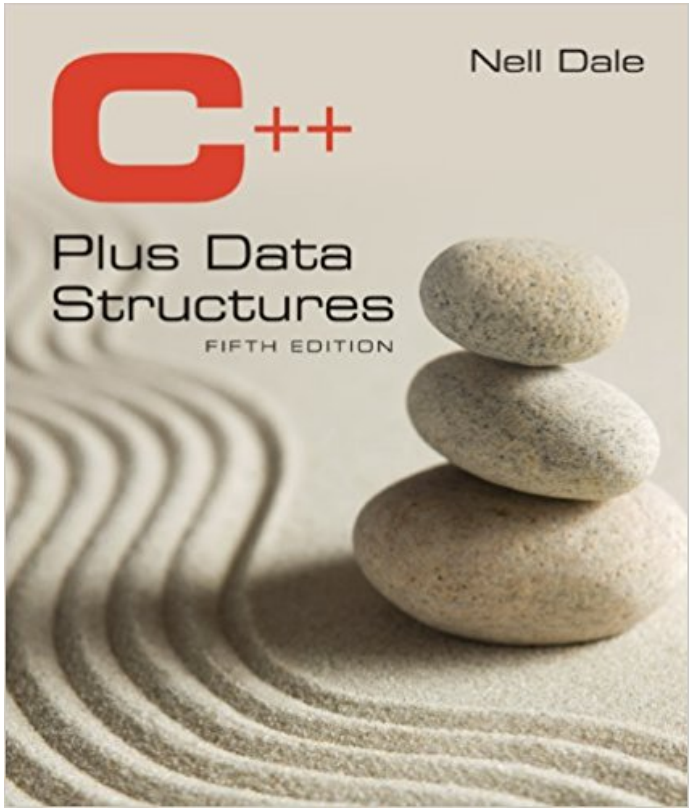

Figure: Text book

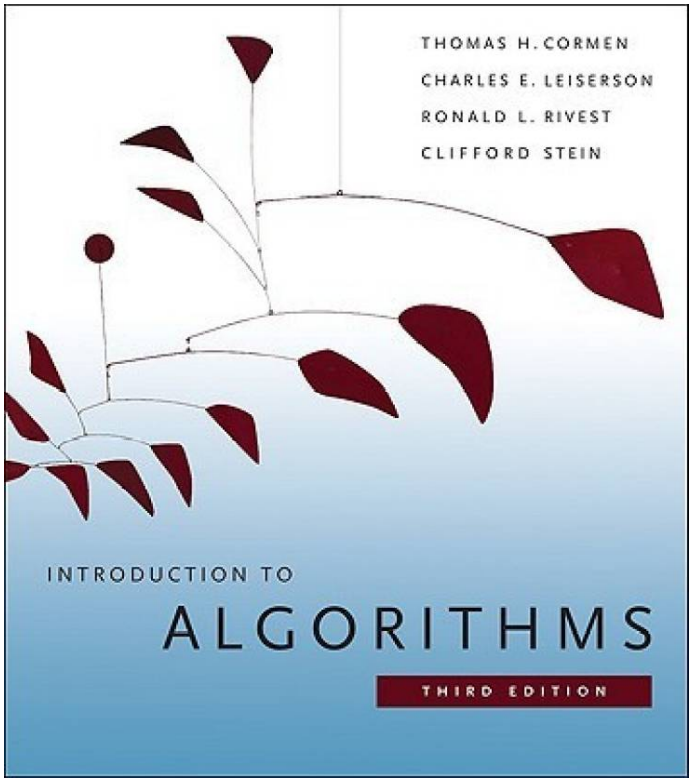

Figure: Reference book

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- Different modes will be used in delivering the content
  - Formal Presentation, Whiteboard, Writing codes

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- Emphasis will be on problem solving
  - Hence, being present in the class and participating in the discussion will be important

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- Do the assignments and lab work on time.

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- Do not pile up your problems
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  - Allow for expiation time
- Do the assignments and lab work on time.
  - Penalty will be there for late submission (5% after 1 day, 10% after 2 days and 20% after 3 days)
  - Submission after three days will **NOT** be considered

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  - Midterm exam (1)
  - Final exam (1)

Assessments

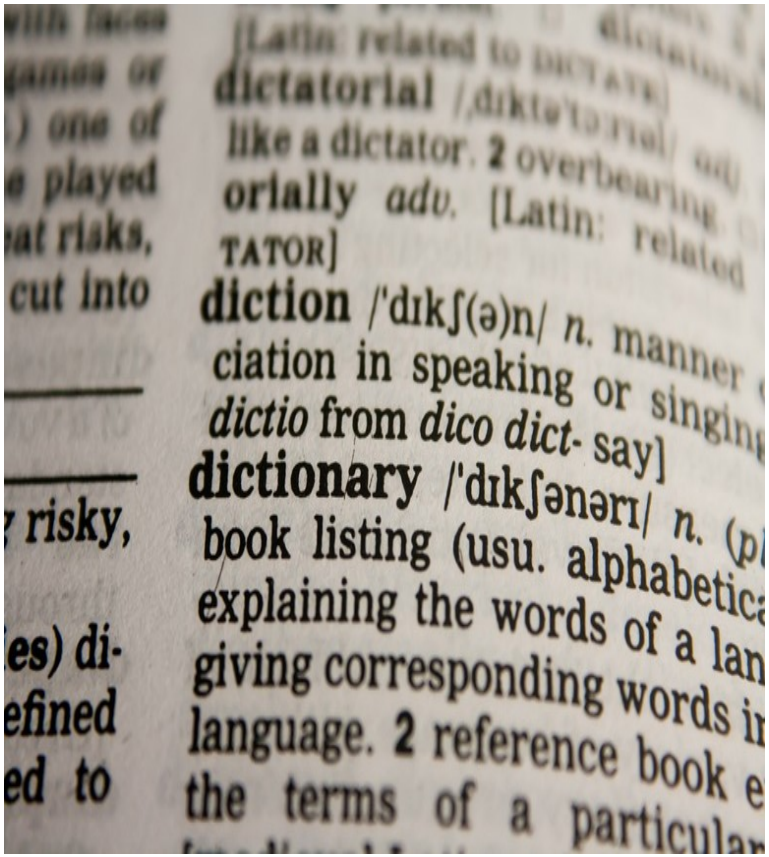
Assessments	Weights (%)
Lab	20
Quizzes	15
Assignments	15
Midterm	20
Final	30

Data Structures

Introduction to Data Structures

- One of the most fundamental courses in Computer Science.
- Good knowledge of Data Structures is a must to design and develop efficient software system.
- We deal with data all the time and how we **store**, **organize** and **group** our data together matters.
- Let's pick up some examples from our day-to-day life.

Examples


dictatorial
like a dictator. 2 overbearing
orially adv. [Latin: related
TATOR]
diction /'dɪkʃ(ə)n/ n. manner
ciation in speaking or singin
dictio from dico dict- say]
dictionary /'dɪkʃənərɪ/ n.
book listing (usu. alphabetica
explaining the words of a lan
giving corresponding words i
language. 2 reference book e
the terms of a particular


NEW YORK CITY MAP
NEW JERSEY
LEGEND
Major Road
Other Road
Golf Course
Park/Vegetation
Point of Interest
Shopping Center
Museum
Monument
Hospital
BRONX
Albert Einstein College Hospital
MANHATTAN
Grant's Tomb
Cathedral of Saint John the Divine
Whitney Museum of American Art
LaGuardia Airport
Times Square
Manhattan Mall
The Empire State Building
Bellevue Hospital Center
United Nations Headquarters
Museum of the Moving Image
New York Hall of Science
Queens Museum of Art
Queens Center Mall
QUEENS
Queens Hospital Center
9/11 Memorial Museum
Skyscraper Museum
Ellis Island Immigration Museum
Statue of Liberty
Williamsburg Bridge
Brooklyn Bridge
The Brooklyn Museum
Kings County Hospital Center
John F. Kennedy International Airport
Staten Island Museum
St. George
BROOKLYN
Staten Island Zoo
The Garibaldi-Meucci Museum
Bulles Head
Alice Austen House
Kings Plaza Marina
Rockaway Community Park
STATEN ISLAND
Staten Island University Hospital
Staten Island Mall
Historic Richmond Town
Oakwood
Rossville
Coney Island
Fort Tilden
NORTH ATLANTIC OCEAN
Conference House Park
0 5 10 KM
0 5 Miles
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(Updated on 29th July, 2015)

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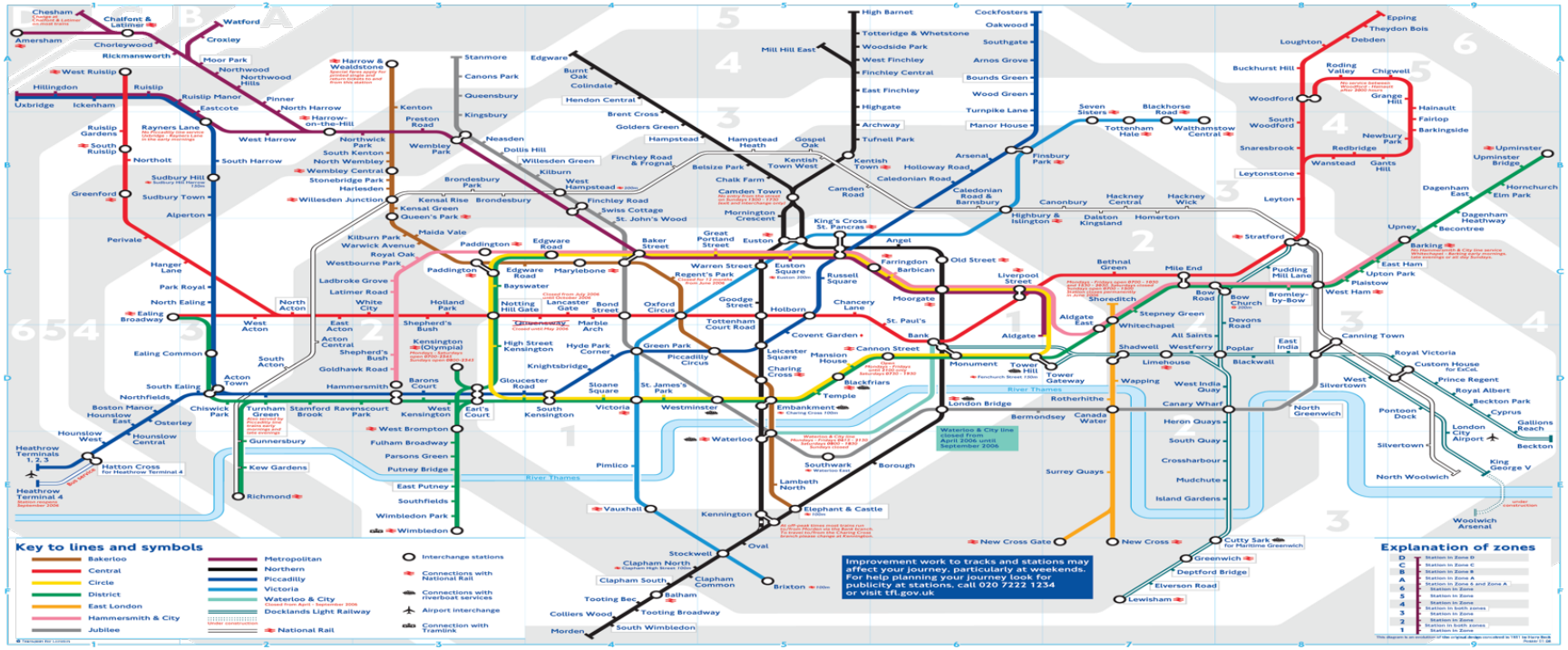
Key to lines and symbols
Bakerloo
Central
Circle
District
East London
Hammersmith & City
Jubilee
Metropolitan
Northern
Piccadilly
Victoria
Waterloo & City
Docklands Light Railway
National Rail
Interchange stations
Connections with National Rail
Connections with riverboat services
Airport interchange
Connection with Tramlink
Improvement work to tracks and stations may affect your journey, particularly at weekends. For help planning your journey look for publicity at stations, call 020 7222 1234 or visit tfl.gov.uk
Explanation of zones

Examples

YEARLY EXPENDITURES	Under $90,000	Over $90,000	Difference $	Difference %
Groceries	$ 2,721.00	$ 4,451.00	$ 1,730.00	164%
Eating Out	$ 1,608.00	$ 4,559.00	$ 2,951.00	284%
Housing	$ 9,448.00	$ 25,121.00	$ 15,673.00	266%
Utilities, Fuel, Public Services	$ 2,091.00	$ 3,491.00	$ 1,400.00	167%
Household Operations	$ 423.00	$ 1,876.00	$ 1,453.00	443%
Housekeeping Supplies	$ 412.00	$ 967.00	$ 555.00	235%
Household furnishings and equipment	$ 1,272.00	$ 4,255.00	$ 2,983.00	335%
Clothing and Services	$ 1,540.00	$ 4,732.00	$ 3,192.00	307%
Vehicle Purchases	$ 2,547.00	$ 4,964.00	$ 2,417.00	195%
Gas, Oil and Other	$ 2,831.00	$ 6,101.00	$ 3,270.00	216%
Public Transportation	$ 312.00	$ 1,455.00	$ 1,143.00	466%
Healthcare	$ 1,696.00	$ 2,747.00	$ 1,051.00	162%
Entertainment	$ 1,476.00	$ 4,467.00	$ 2,991.00	303%
Education	$ 389.00	$ 1,816.00	$ 1,427.00	467%
Personal Insurance, Pensions	$ 2,870.00	$ 12,614.00	$ 9,744.00	440%
Cash Contributions	$ 863.00	$ 4,019.00	$ 3,156.00	466%
TOTALS	$ 32,499.00	$ 87,635.00	$ 55,136.00	270%

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    - Algorithms?

Algorithms

An *Algorithm* is a step by step process of solving a problem

Figure: Muhammad ibn Musa al-Khwarizmi, statue in Amir Kabir University, Tehran

Take-away tasks

Can you think of how to find the GCD of two numbers?

How can you sort an array of integers?