BRAC
UNIVERSITY

Inspiring Excellence

Introduction

Lecture 1 | Part 1 | CSE421 – Computer Networks

Department of Computer Science and Engineering
School of Data & Science

Objectives

- Internet today
- Network in our lives
- Course outline
- Online Learning
- Marks Distribution
- Books
- About CCNA

Internet Applications (2020)

- **Internet Users**
  - **4.48B** users worldwide
  - **2.1B** in Asia
- **Web**
  - **1.94B** – Number of websites (December).
  - **200+ m** – Added websites in 2019

- **Email**
  - **3.9B** people used email
- **Facebook**
  - **2.45 B** users in 2019 December
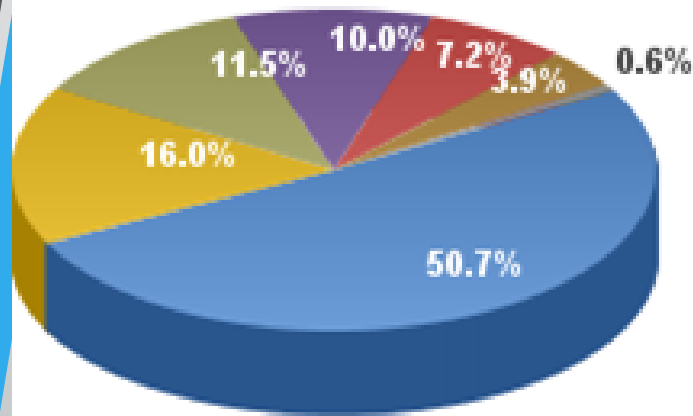 - **3.2 billion** reacts on Facebook every day.
- **Other Social Media**
  - **321+ m** users in Twitter
  - **500 million** of tweets sent **every** day

Internet Statistics (2019)

Internet Users Distribution in the World - Mid-Year 2019

Source: Internet World Stats - www.internetworldstats.com/stats.htm
Basis: 4,536,248,808 Internet users in June 30, 2019
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- Asia 50.7%
- Europe 16.0%
- Africa. 11.5%
- Lat Am / Carib. 10.0%
- North America 7.2%
- Middle East 3.9%
- Oceania / Australia 0.6%

10.0% 7.2% 3.9% 0.6%
11.5%
16.0%
50.7%

WORLD INTERNET USAGE AND POPULATION STATISTICS
2019 Mid-Year Estimates

World Regions	Population (2019 Est.)	Population % of World	Internet Users 30 June 2019	Penetration Rate (% Pop.)	Growth 2000-2019	Internet World %
Africa	1,320,038,716	17.1 %	522,809,480	39.6 %	11,481 %	11.5 %
Asia	4,241,972,790	55.0 %	2,300,469,859	54.2 %	1,913 %	50.7 %
Europe	829,173,007	10.7 %	727,559,682	87.7 %	592 %	16.0 %
Latin America / Caribbean	658,345,826	8.5 %	453,702,292	68.9 %	2,411 %	10.0 %
Middle East	258,356,867	3.3 %	175,502,589	67.9 %	5,243 %	3.9 %
North America	366,496,802	4.7 %	327,568,628	89.4 %	203 %	7.2 %
Oceania / Australia	41,839,201	0.5 %	28,636,278	68.4 %	276 %	0.6 %
WORLD TOTAL	7,716,223,209	100.0 %	4,536,248,808	58.8 %	1,157 %	100.0 %

Internet Statistics (2019) - Bangladesh
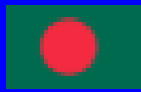
BANGLADESH

BD - 168,065,920 population (2019) - Area: 142,615 sq km

Capital city: Dhaka - Pop. 15,669,000 (2015) - Median Age: 26.7 years

GNI (per capita): $1,909 (2019); $1,751 (2018); $1,470 (2017) per World Bank
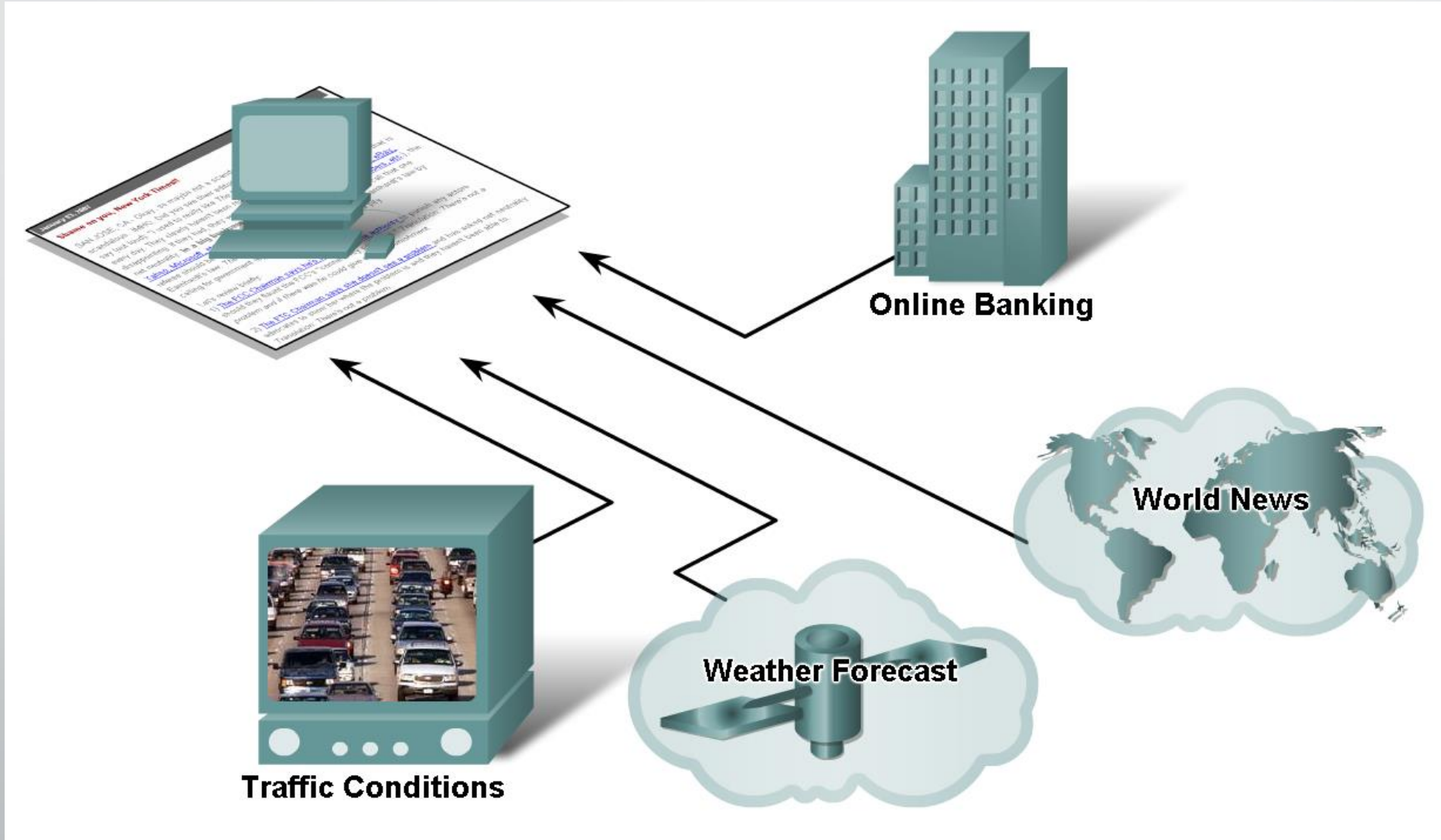
96,199,000 Internet users for June 2019, 57.2% penetration, per BTRC.

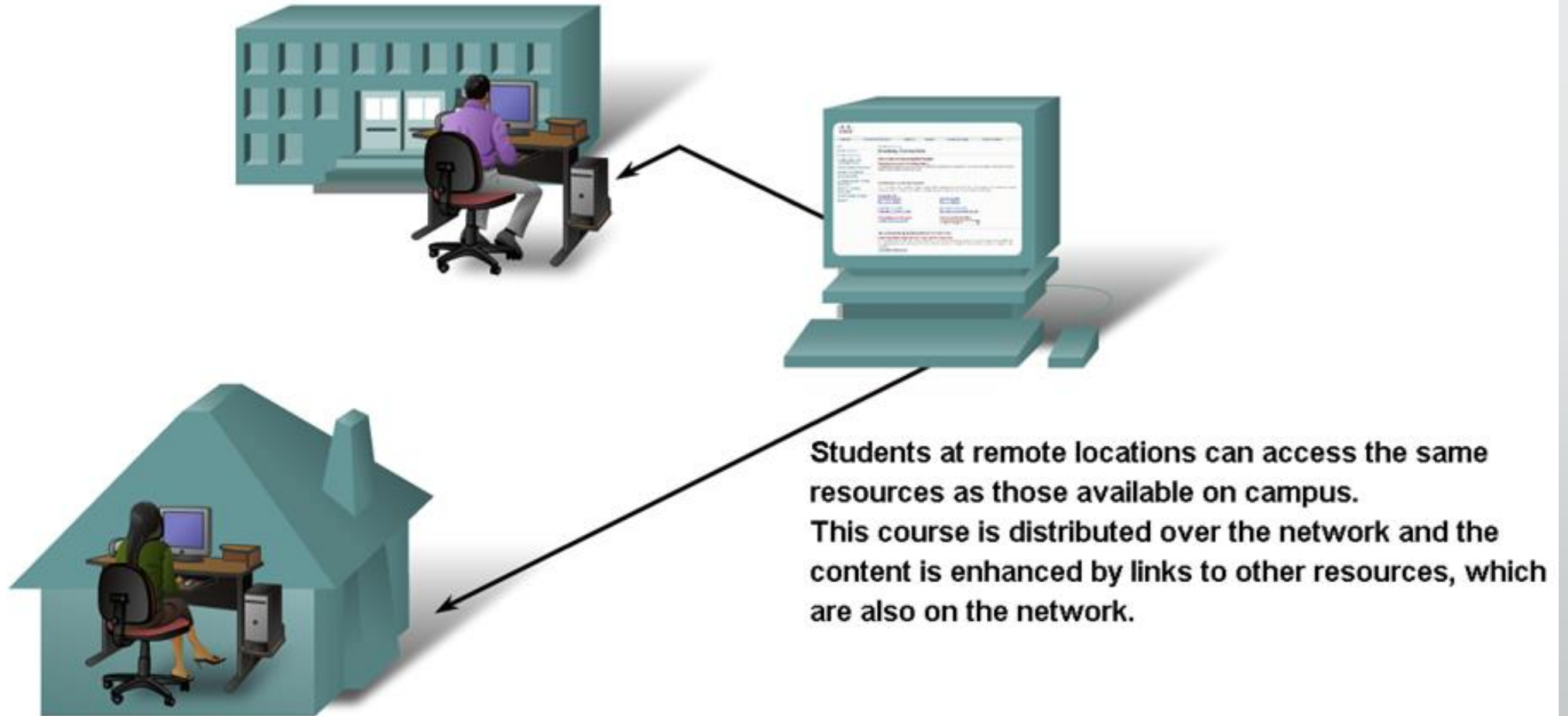28,000,000 Facebook users in Dec/2018, 16.7% penetration rate.

Local Time and Weather in Dhaka, Bangladesh

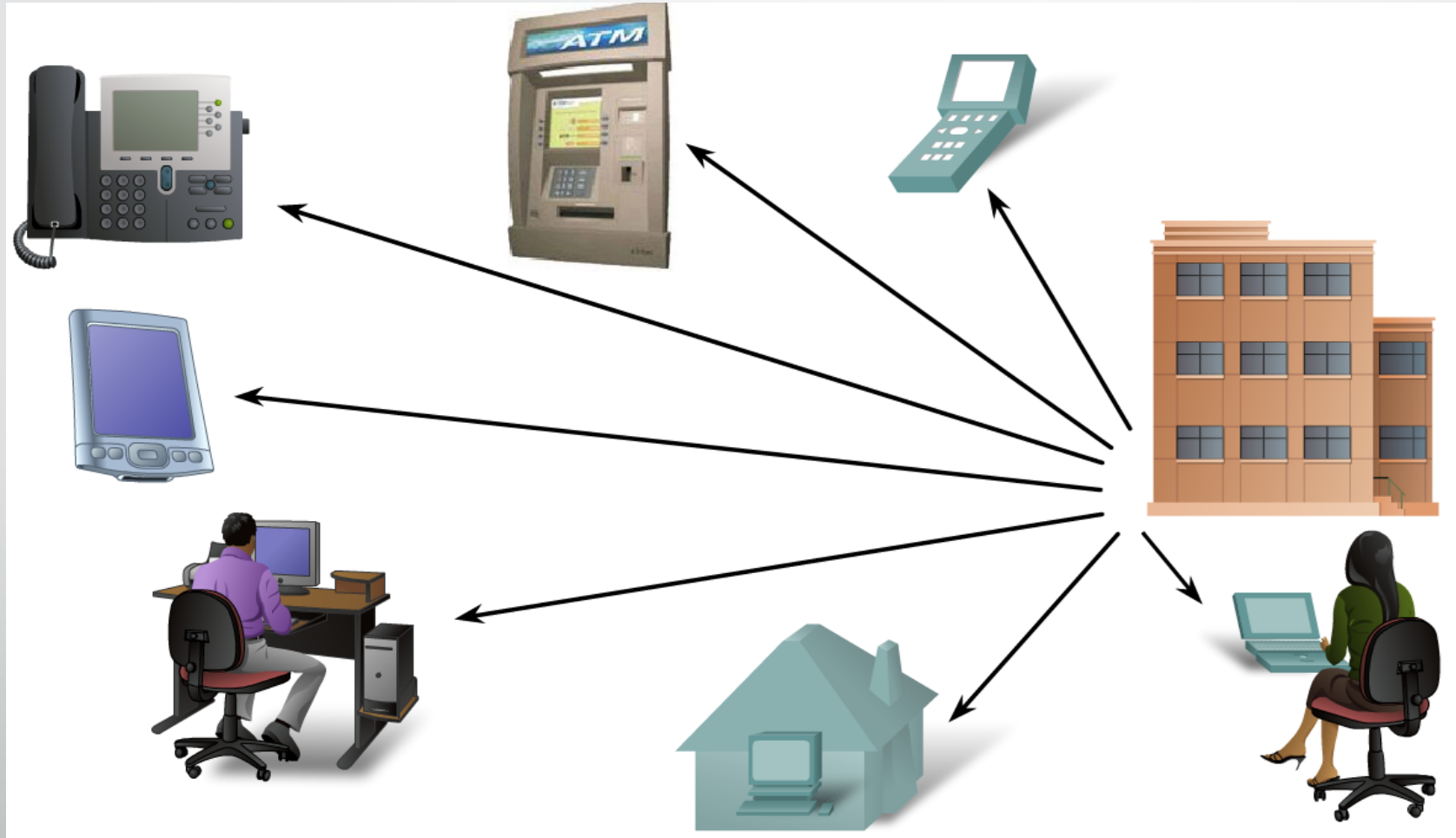Source; http://www.internetworldstats.com/

Networks supporting the way we live

Networks supporting the way we learn

Students at remote locations can access the same resources as those available on campus.
This course is distributed over the network and the content is enhanced by links to other resources, which are also on the network.

Networks supporting the way we work

Networks supporting the way we play

Online Interest Groups

Online Games

Online Entertainment

Online Travel
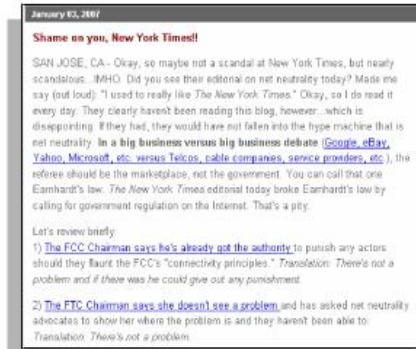
Instant Messaging

The onboard data network provides a range of services to airline personal seatback video systems.

How?

Course Outline

- **Protocols and Network Architecture**

  - Introduce the concepts of network architectures, topologies, layering and protocols.

- **Application Layer**

  - Describe key application layer concepts such as network services required by applications, clients and servers.

- **Transport Layer**

  - Explain transport layer concepts, relationship with the network and application layers, and services such as principles of reliable data transfer and congestion.

- **Network Layer**

  - Teach network layer concepts, routing principles, algorithms, and addressing and Internet's various protocols.

Course Outline

- **Data Link Layer**
  - Identify link layer services, link layer address and multi-access techniques.
- **Network Security**
  - Teach basic knowledge of the use of cryptography and network security.
- **Wireless Networks**
  - Explain the operation of wireless LANs based on the IEEE802.11 standards, and mobility.
- **Labs**
  - Using simulation tools to observe and analyze behaviors of networking protocols.
- **Outcome**
  - Design and create a small network for an organization.

Online Learning

- **Video Lectures**
  - Uploaded before class
- **Live Class Sessions**
  - For clarifications. Question and answer sessions
- **Quizzes**
  - 6~8 quizzes (Best N-2 at max will be taken)
- **Assignments**
  - 6 to 8 assignments
- ****Quizzes and Assignments are section based.**
- **** Grading policy according to the University.**

Tentative Marks Distribution

Category	Distribution
Assignments	10%
Quizzes	15%
Midterm	20%
Labs	15%
Finals	35%
Attendance	5%

Books

| Title	Author	Edition	Year	Publisher	ISBN
Computer Networking: A Top-Down Approach Featuring the Internet	Jim Kurose and Keith Ross	7th	2017	Pearson	ISBN-13: 978-0133594140
Data Communication and Networking	Behrouz Fourazan	5th	2017	Mac-Graw Hill	ISBN-13: 9780073376226
CCNA 200-301 Official Cert Guide, Volume 1	Wendell Odom		2019	Cisco Press	ISBN-13: 978-0-13-579273-5

CCNA

- **Cisco Certified Network Associate (CCNA)**

- A popular industry certification program in computer networking developed by [Cisco Systems](#).

- Cisco created the CCNA to recognize basic competency in the installation and support of medium-sized networks.

- Globally recognized and it is respected by most companies across the globe.

- This certificate, not only enhances the career growth opportunities, but also provide the candidates with a higher pay scale.
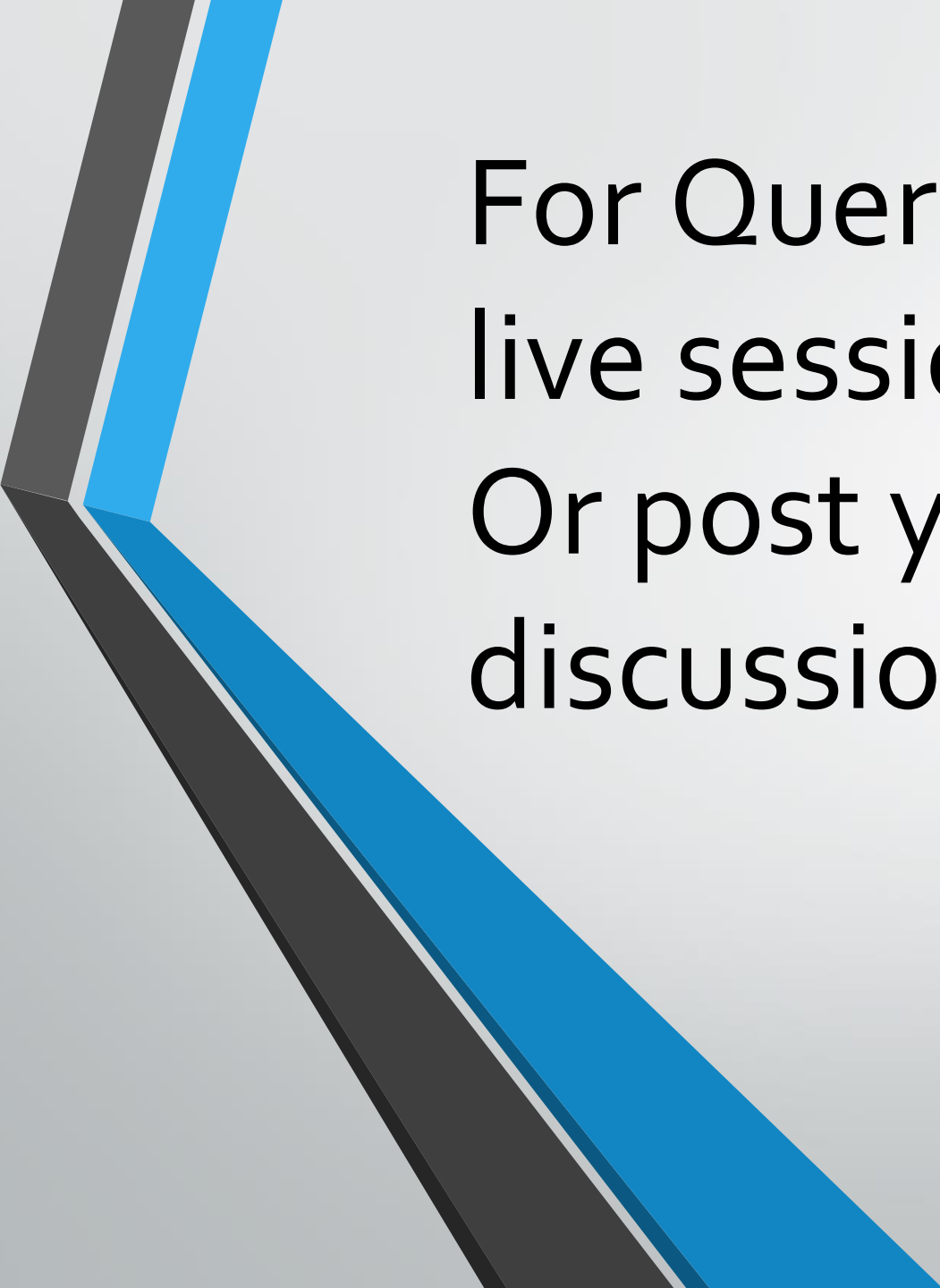
CCNA Certification

- **Eligibility Criteria**
- To receive the CCNA certificate an individual must have passed either of two exams:
- 1. ICND1 Exam (100-105) and the ICND2 (200-105)
  - (Cost $150 each) (90 mins each)
- 2. Combined CCNA Exam (200-301) (Cost $300) (120 mins)
- **Cisco Networking Academy** students get discount vouchers.
- Validity 3 years
- Exam must be given at a Pearson VUE center
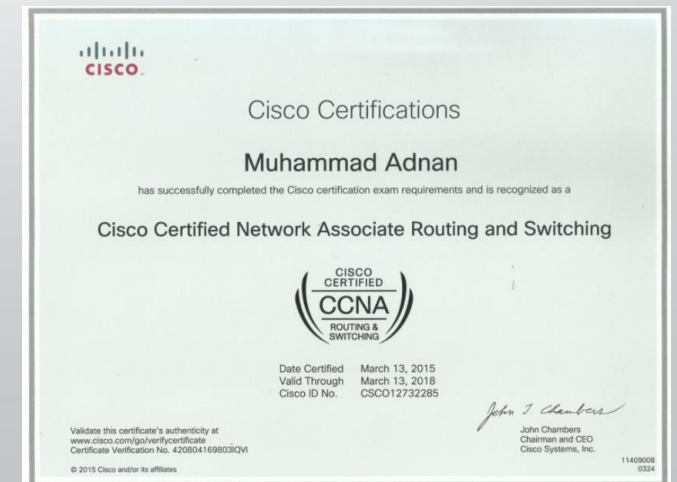
CCNA Content

CCNA Module	Name of Module	Aligned with which Bracu Courses
CCNA 1 v7	Introduction to Networks	CSE421
CCNA2 v7	Routing, Switching & Wireless Essentials	CSE490 (WAN Routing)
CCNA3 v7	Enterprise Networking, Security & Automation	CSE490 (WAN Routing)

**We do not provide the "Vendor Certification"
** We do provide a certification of course completion.

For Queries be present in the live sessions.

Or post your queries in the discussion board

Thank you