

# Thadomal Shahani Engineering College

Bandra (W.), Mumbai - 400050

Division: C2

Batch: 3

Roll Number: 1902112



Certify that Mr. \_\_\_\_\_ Tushar Nankani \_\_\_\_\_

of \_\_\_\_\_ Computer \_\_\_\_\_ Department, Semester \_\_\_\_\_ 5 \_\_\_\_\_

with Roll No. 1902112 has completed a course of necessary

assignments in the subject **Professional Communication & Ethics II**

(**CSL504**) under my supervision in Thadomal Shahani Engineering

College in the academic year **2021 - 2022**

**Dr. Rita Sharma**

Teacher In-Charge

Head of Humanities Department

**Dr. Tanuja Sarode**

Head of the Department

**Dr.G.T.Thampi**

Principal

Date: 19<sup>th</sup> October, 2021

**List of Tutorials**  
**T.E. (Comp.) Sem V**  
**Subject: Professional Communication & Ethics II (CSL504)**

**Title of Tutorials**

<b>Ass. No.</b>	<b>Assignment</b>	<b>Date</b>	<b>Page No.</b>
1	Meeting Documentation	5 August, 2021	1-4
2	Corporate Ethics	9 August, 2021	5-10
3	Statement of Purpose	2 September, 2021	11-12
4	Employability Skills (Cover Letter and Resume)	9 September, 2021	13
5	Short Proposal	9 September, 2021	14-18
6	IEEE Technical Paper	16 September, 2021	14-28
7	Interpersonal Skills	23 September, 2021	29-32
8	Verbal Aptitude Test	6 October, 2021	33-38
9	Book Report (First Draft)	5 August, 2021	39-41
10	Power Point Presentation	29 September, 2021	42-64
	Lecture Notes	10 July, 2021 – 6 October, 2021	65-74

# UNIVERSITY OF MUMBAI

Mahatma Gandhi Road, Vidya Nagar

Kala Ghoda, Fort, Mumbai, Maharashtra 400032

Ph. 9999999999, fax: 88888888, E-mail. [mu@okay.com](mailto:mu@okay.com)

August 05, 2021

## NOTICE

This is to inform you that the second meeting of the Board of Studies will be held at the University of Mumbai Head Office, at 10.30 a.m. on August 31, 2021. The agenda for the meeting is attached.

Sd/-

(Tushar Nankani)

Secretary

# UNIVERSITY OF MUMBAI

Mahatma Gandhi Road, Vidya Nagar

Kala Ghoda, Fort, Mumbai, Maharashtra 400032

Ph. 9999999999, fax: 88888888, E-mail. [mu@okay.com](mailto:mu@okay.com)

August 05, 2021

## AGENDA

- 2.01 Confirmation of the minutes of the last meeting
- 2.02 Proposal for creating and establishing Department of Life Sciences
- 2.03 To discuss syllabus of first and third semester of B.Tech, M.Tech
- 2.04 Examination Fees
- 2.05 Date for the next meeting
- 2.06 Any other matter with the permission of the Chairperson
- 2.07 Vote of thanks

Sd/-

(Tushar Nankani)

Secretary

# UNIVERSITY OF MUMBAI

August 31, 2021

Minutes of the Second Meeting of the Board of Studies held at the University of Mumbai Head Office [Fort Office, Mumbai] at 3.30 p.m. on August 31, 2021.

<b>Present:</b>	Mr. Abhay Mukul	Chairperson
	Mr. Chinmay Palav	Director
	Mr. Dheeraj Lalwani	Director
	Mr. Vivek Namaye	Member
	Mr. Tanooj Raghani	Member

<b>In attendance:</b>	Mr. Tushar Nankani	Secretary
-----------------------	--------------------	-----------

## **2.01 Confirmation of the minutes of the first meeting**

Minutes of the First Meeting have been read and approved and the queries have been taken care off and sent to the respective departments for action

## **2.02 Proposal for creating and establishing Department of Life Sciences**

The proposal for creating and establishing the Department of Life Sciences has been unanimously approved by all the members provided faculty members and infrastructure should be as per the UGC guidelines. All members agreed with the suggestion.

## **2.03 To discuss syllabus of first and third semester of B.Tech, M.Tech**

The proposal for changes in the syllabus of 1st semester and modifying the course structure of 3rd semester according to the new Education Policy was unanimously approved by all the members. Addition of topics such as Artificial Intelligence and Advanced artificial intelligence in their respective fields have been approved by the committee.

## **2.04 Examination Fees**

Examination fees will be as per UGC guidelines. Remuneration will be as per decision made under agenda of the first meeting. This has been approved by the Head of Department, Mr. Vivek Namaye, and the finance committee.

### **2.05 Date for next meeting**

The date for the next meeting was finalized by the meeting attendees. The third meeting of the Board of Directors will be held on September 1, 2021 at 10:00 a.m. at the Mumbai Office.

### **2.06 Vote of thanks**

The Chairperson thanked all the meeting attendees with a vote of thanks and concluded the meeting. The meeting was concluded at 7.00 p.m

Tushar Nankani

Rita Sharma

Secretary

Chairperson

August 31, 2021

August 31, 2021

6:30 p.m.

6:30 p.m

# CORPORATE ETHICS

## [Case Study]

[Assignment No. 2]

### ***Coke - Ethical Issues: The Recall***

On June 13, 1999, Coca-Cola<sup>1</sup> (Coke) recalled over 15 million cans and bottles after the Belgian Health Ministry announced a ban on Coke's drinks, which were suspected of making more than 100 school children ill in the preceding six days. This recall was in addition to the 2.5 million bottles that had already been recalled in the previous week.

The company's products namely Coke, Diet Coke and Fanta had been bottled<sup>2</sup> in Antwerp, Ghent and Wilrijk, Belgium while some batches of Coke, Diet Coke, Fanta and Sprite were also produced in Dunkirk, France.

Children at six schools in Belgium had complained of headache, nausea, vomiting and shivering which ultimately led to hospitalization after drinking Coke's beverages. Most of them reported an 'unusual odor' and an 'off-taste' in the drink. In a statement to Reuters, Marc Pattin, a spokesman for the Belgian Health Ministry explained the seriousness of the issue: "Another 44 children had become ill with stomach pains, 42 of them at a school in Lochristi, near Ghent, northwest Belgium.

We have had five or six cases of poisoning of young people who had stomach pain after drinking (the suspect beverages)." In the same week, the governments of France, Spain and Luxembourg also banned Coke's products while Coke's Dutch arm recalled all products that had come from its Belgium plant. The entire episode left more than 200 Belgians and French, mostly school children, ill after drinking the Coke produced at Antwerp and Dunkirk.

The company had to assure its British customers that the products made in its UK factories were safe. By June 15, 1999, Coke had recalled about 30 million cans and bottles, the largest ever product recall in its 113-year history. For the first time, the entire inventory of Coke's products from one country were banned from sale.

As part of a damage control exercise, Coke sent a team of scientists to Europe. During its visit to Europe after a week of these incidents, Coke's chairman and CEO Michael Douglas Ivester said, "We deeply regret any problems encountered by our European consumers in the past few days." Coke Belgium even announced that it would reimburse the medical costs for people who had become ill after consuming its products.

#### **The Recall Contd...**

The recall had a significant negative impact on Coke's financial performance with its second-quarter net income coming down by 21% to \$942 million. Moreover, the entire operation cost Coke \$103m (£66m) while its European bottling venture showed a 5% fall in revenues.

Analysts felt that the Belgium recall was one of the worst public relations problems in Coke's history. One analyst<sup>3</sup> alleged that the company had information about people who had become ill weeks prior to the above incidents. Coke had an opportunity to disclose this information but it did not do so.

He blamed Coke for being unethical in not disclosing the information, "The instinct is to pull information in, and that is almost always wrong. The right move is to focus on the health of the customer.

Even though you don't think this information is relevant, you should get it out - because that allows people who might think it is relevant to go through whatever process they want to go through. Coke might have done a lot more than it did in the opening days of the crisis."

Another issue, which worried analysts, was the illness caused to the innocent school children. They blamed Coke's promotion strategy to sell soft drinks to school children which had raised lot of controversies in the US.

## ***Background Note***

Dr. John Pemberton, an Atlanta-based pharmacist, developed the original formula of Coke in 1886. It was based on a combination of oils, extracts from coca leaves (coca nut) and various other additives. The ingredients were refined to create a refreshing carbonated soda. Pemberton's bookkeeper, Frank Robinson, suggested that the product be named 'Coca-Cola'.

He even developed a way of lettering Coca-Cola in a distinctively flowing script. On May 8, 1886, Coke went on sale for the first time in the Joe Jacobs Drug Store. The first Coke advertisement appeared in 'The Atlanta Journal' on May 29, 1886. Pemberton, with modest help from several investors, spent \$73.96 on advertising, but was able to sell only 50 gallons of syrup at \$1 per gallon. The product slowly gained acceptance after a heavy outpouring of free sample drinks.

In 1888, after Pemberton's death, Asa Candler, Pemberton's friend and a wholesaler druggist purchased a stake in the company. Coke sales soared even without much advertising and as many as 61,000 servings (8 ounces) was sold during 1889. Sensing the potential of the business, Candler decided to wind up his drug business and be associated with the Coke full time. As the business expanded, Candler also increased the advertising outlay.

By 1891, Candler had complete control of Coke for \$2,300. In 1892, Candler formed 'The Coca-Cola Company' and, a year later, registered 'Coca-Cola' as a trademark. Only Candler and associate Robinson knew the formula. It was then passed on by word of mouth and became known as the 'most closely guarded secret in the American industry'. Despite occasional rumors, company sources maintained that cocaine was not an ingredient in Coke's formula.

### **Background Note Contd...**

By 1895, Coke was sold in all parts of the US, primarily through distributors and fountain owners. When it was first launched, Coke had been advertised as a drink, which relieved mental and physical exhaustion, and cured headache. Later, Candler and Robinson repositioned Coke as a refreshment drink. In the beginning of the 20th century, corporations in the US drew flak for promoting adulterated products and resorting to misleading advertising. Coke was an ideal target for such attacks.

The US government passed the Pure Food and Drugs Act in June 1906. A case was registered against Coke and the trial, which opened in March 1911, attracted widespread attention. Coke, eventually, won the case. The decision, however, was reversed in the Supreme Court. Finally, the case was settled out of court in 1917 with Coke agreeing to reduce the caffeine content by 50%.

In 1919, Coke was sold to an investment group headed by Ernest Woodruff for \$25 million - \$10 million in cash and \$15 million in preferred stock. Woodruff's major decision after taking over was the establishment of a Foreign Department to make Coke popular overseas. While expanding in foreign markets, Coke faced several problems.

Initially, it had to rely on local bottlers who did not promote the product aggressively, or on wealthy entrepreneurs who were unfamiliar with the beverages business. The company also faced problems regarding government regulations, trademarks registration, languages, and culture.

By 1927, Coke's sales climbed to nearly 23 million gallons. Even though Pepsi Cola emerged as a major competitor to Coke in the 1930s, Coke continued to do well and flourished during the war. By the time the US entered the Second World War, Coke was over fifty years old and well established. In 1962, Paul Austin (Austin) became Coke's tenth president and four years later, became the chairman and CEO of the company. One of Austin's first initiatives was the launch of a diet drink.

By 1965, soft drink sales in the US had risen to the level of 200 drinks per capita and Coke's market share had risen to 41% against Pepsi's 24%. In 1964, Coke also acquired a coffee business. The company developed drinks with new flavors and also targeted food chains, which were fast gaining popularity.



In the 1970s, Coke faced stiff competition from Pepsi. Pepsi's advertising budget exceeded that of Coke. In 1978, figures also revealed that Pepsi had beaten Coke in terms of supermarket sales with its dominance of the vending machine and fountain outlets. Coke also faced problems in the 1970s when the Food and Drug Administration (FDA) ruled that saccharin, an important ingredient in Coke, was harmful and a potential source of cancer.

Coke's performance continued to decline in the late 1970s as Austin led the company into new businesses such as shrimp farming, water projects and viniculture. The political and social unrest in countries like Iran, Nicaragua and Guatemala also affected Coke's market share. The company's poor performance and the increasing discontent among its employees, led to Austin's exit and the nomination of Roberto Goizueta, a 48-year-old chemical engineer, as the new CEO in 1980.

### **Background Note Contd...**

Goizueta quickly concluded that the obsession with market share was doing little good to the company, and in certain businesses, the Return on Capital Employed (ROCE) was actually less than the cost of capital. Goizueta drafted a strategic statement, which made it clear that the company had to earn profits at 'a rate substantially in excess of inflation', in order to give shareholders an above average return on their investment. He sold the non-performing businesses such as wine, coffee, tea, industrial water treatment, and aquaculture.

Coke faced a major scare in 1993, when the markets reacted violently and the stocks of big companies, including Coke, tumbled. The event popularly referred to as Marlboro Friday, involved a drastic price cut by Philip Morris in response to price undercutting by private cigarette brands. Coke stock fell by about 10% in the weeks following Marlboro Friday.

Coke executives embarked upon a major public relations exercise to undo the damage. They stressed that brands were more profitable than private labels at retail stores and that branded soft drinks were far less vulnerable than branded cigarettes. In mid-1998, health experts and CCFPE in the US criticized Coke for targeting school children through exclusive contracts.

The controversy intensified further when a district administrator<sup>4</sup> of Coke in Colorado Springs, Colorado, sent a memo to all the school principals in the district. The memo asked the principals to encourage the sale of Coke products because the district risked failing to meet its contractual obligation to sell at least 70,000 cases of Coke products.

Falling short of target would significantly reduce payments from Coke to these schools over the next seven years. Several newspapers and journals, including *Denver Post*, *Harper's Magazine*, *The Washington Post* (*Post*), and *The New York Times* criticized the memo.

## ***Exclusive School Contracts***

The exclusive school contracts allowed Coke exclusive rights to sell its products - soda, juices, and bottled water - in all the public schools of a district. Under the plan, the schools got \$350,000 as an "up front" money<sup>5</sup> and a percentage which ranged from 50 percent to 65 percent of total sales. The exclusive contract with Coke represented one of the fastest growing areas of commercialism of schoolhouses (Exhibit I). According to the Center for Commercial-Free Public Education (CCFPE) in April 1998, there were 46 exclusive contracts between school districts and soft drink bottlers in 16 states in the US. By July 1999, it increased to 150 contracts across 29 states.

Critics said that these contracts represented the growing trend of commercialization on school campuses. When students saw products advertised in their schools, they frequently thought that it was something that the schools were endorsing. By displaying its logos prominently in public schools, Coke hoped to re-establish brand loyalty and brand recognition. A study found that the average American teenager could identify some 1,000 corporate logos, but could not name even ten plants and animals in the area where he or she lived.

Parents were concerned about the proliferation of logos on school scoreboards, walls, buses and textbooks. Some groups opposed the commercialization in schools saying that it was unethical, immoral and exploitative. They criticized the education community for encouraging commercialization in schools. Alex Molnar, Professor of Education, University of Wisconsin, Milwaukee said, "It is an erosion in our culture between what is public and what is private. It represents a subversion of the idea that the school is for the public welfare."

### **Exclusive School Contracts Contd...**

Health experts expressed concerns about the increase in consumption of soft drinks by young people consume, and the consequent harm to their health (Exhibit II). In less than 30 years, the annual consumption of soda per person had more than doubled from 22.4 gallons in 1970 to 56.1 gallons in 1998<sup>6</sup>. The Post reported that Coke's exclusive contract with the District of Columbia's public schools allowed for nearly twice as many beverage vending machines in high schools, middle schools and elementary schools as were there before the contract.

In a Post article, Andrew Hagelshaw of the CCFPE said, "What we have seen in just about every exclusive contract around the country is a resulting increase in the amount of soda consumed by students ... There's almost always an increase in the number of vending machines and they're put into schools that previously didn't have them."

Another report titled *Liquid Candy*<sup>7</sup> said that compared to 20 years ago, the teenagers today drank twice as much soda as milk. According to Colleen Dermody, communication director, Center for Science in the Public Interest (CSPI) "Vending machines in schools created a preference for soda over milk, juice, and water."

In 1994-96, CSPI's analysis of teenagers between the age of 12 and 19 showed that about 5 percent of male softdrink consumers drank at least 19 ounces per day and 5 percent of female consumers drank at least 12 ounces per day (Exhibit III). Richard Troiano<sup>8</sup> said that the data on soda consumption suggested a link with childhood obesity.

According to Troiano, overweight children tend to consume more calories from soda than those who were not. Childhood obesity rates in the US had increased by 100 percent in the past 20 years. Studies had also shown the negative effect of caffeine<sup>9</sup> on children, an additive present in most of the cola drinks. Analysts<sup>10</sup> concluded that soft drink makers were encouraging teenagers to consume more drinks, which would cause serious health problems for a whole generation.

Another analyst<sup>11</sup> suggested, "If the schools must have vending machines, they should concentrate on healthy choices, like bottled water." However, the exclusive contracts put pressure on schools to increase the number of vending machines to increase sales of soft drinks. Post reported that prior to signing an exclusive contract with Coke, few schools had vending machines. After signing the contract, most high schools had four machines, middle schools had three, and elementary schools one. Another study<sup>12</sup> said that in the last 20 years in the US, school enrolment had increased 6.8 percent, while participation in school meal programs had surprisingly declined by 1.2 percent.

One major factor was that vending machines filled mostly with junk food competed with school meal programs. The school meal program provided nutritious meals for nearly 27 million children in US schools. The US government had allocated \$5.46 billion in 1999 for the school meal programs. A traditional school meal included two ounces of protein, three-fourths cup of fruit and vegetables, approximately two servings of grain products and a half-a-pint of milk.

In 2000, the American Federation of Teachers denounced the sale of competitive foods,<sup>13</sup> calling them detrimental to students' health and development of sound eating habits. The Seattle Education Association adopted similar resolutions against commercialization in Seattle's public schools.

### **Exclusive School Contracts Contd...**

By mid-2001, 240 district schools in 31 states had entered into an exclusive contract with Coke. According to the National Soft Drinks Association (NSDA), sixty percent of all public and private middle schools and high schools sold soda in the US. The NSDA challenged the information presented by health advocates, calling it "an insult to consumer intelligence." They said that any attempt to link soft drinks to health problems was not supported by facts. According to the association, no direct connection had been established between increased soda consumption and obesity.

## *The Explanation*

While Coke faced a lot of criticism from health experts and public agencies for targeting school children during 1998-1999, the company received a major setback during the European crisis in which school children were the major victims.

After the crisis, Coke investigated the problem by testing the suspect batches for chemicals. The company claimed that the tests showed nothing toxic in the beverages. However, to explain the whole crisis, Philippe Lenfant, general manager of Coke Belgium, said that there had been separate errors at two plants.

The products from the Antwerp plant had a strange odor due as some fungicide had accidentally fallen on the exterior of the cans. In addition, Coke had determined that the strange taste was the result of a sub-standard gas used to carbonate the products.

The plant in Dunkirk had some cans which had been contaminated with a wood preservative during shipping. In the last week of June 1999, the Belgium government lifted the ban on all Coke products, with the exception of Coke and Sprite. France allowed one of the two Coke plants to reopen, but the ban remained on all Coke products imported from Belgium. In late June 1999, after inconclusive tests and review of procedures by Coke and European health inspectors, Belgium and France lifted the ban on Coke completely. By the end of June 1999, the second French plant was back in business.

In a letter to shareholders dated July 12, 1999, almost a month after the incidents, Ivester said that there was never a problem with the actual Coke products. The letter said, "In the space of a few days, our system experienced two very limited quality problems at bottling/canning plants in Belgium and France. At no point was any health hazard present in our products.

However, these problems resulted in an off taste and off smell of products and packages, and some consumers reported feeling ill after drinking our beverages. Any quality issue, of course, is unacceptable. Nothing is more important to us than the integrity of our products, and I have apologized to our consumers for any discomfort or inconvenience. Many outstanding Coke people responded quickly to the situation, working diligently to recall the products, determine the causes and share our findings."

Analysts said that Coke had not handled the situation well and its media message was confusing, inconsistent and muddled. Coke alternately claimed that pesticide residue on the can or bottle, or a bad batch of carbon dioxide, was to be blamed for the "off" taste. On the other hand, the company also insisted that there was never any health threat. A company spokesman assured consumers, "It may make you feel sick, but it is not harmful."

In August 1999, the European Commission reprimanded Coke, asserting that the company had not cooperated adequately and its explanations were "not entirely satisfactory." It also suggested that while Coke blamed suppliers outside its sphere of influence, "One cannot exclude that errors were committed in the selection of plants or the dosage of extracts in Coke's own concentrate." While no deaths were linked to the Coke problems, it had a significant negative impact on the public confidence in Europe.

Answer the following questions:

1. What are the issues of integrity, ethics posed in the case study?

The case study poses and reviews the crisis faced by Coke in cities of Europe - when people fell ill after consuming its products. The case study also revolves around ethical dimensions involved in Coke's exclusive school contracts in the United States, which was done to promote soft drink sales among school children.

The integrity is critically analysing the ethical issues involved during Coke's European crisis and the exclusive school contracts controversy in the US. Coke sold its product under the disguise of it being a drink, which relieved mental and physical exhaustion, and cured headache. Misleading and false advertising is also considered highly unethical, in violation of the USFDA act of 1906.

2. What options did the soft drink company and the government have?

The company had multiple - viable and ethical – options, yet they chose to prioritise profits over ethics, they prioritised controversial marketing strategies over integrity. They should have from the very beginning adhered to the approved laws and recognised the effect of their drinks on the consumers. As mentioned earlier the company should have recalled all of its cans and issued a public statement addressing the problem and admitting their fault in the first place.

The company should've adhered to all the respective guidelines so as to not indulge in malpractice and unethical behaviour. I would've not sought refuge to schools for my sales since its disastrous for the teenagers. The Government should've kept a stricter check on the company and the concerned product's sales and also, its contents. Laws Should have been introduced for discontinuance of Private players funding educational institutions for their own gains. Institutions should have been funded by the government to end this parasitic relationship. Regular Inspections should have been mandated in the plants where products are manufactured to avoid any nuances later in future.

3. If you were the decision maker, what decisions would you have taken and why?

First and foremost, it is important to find out about the problems and would have done complete research and proper investigation of product and try to fix the problems, before releasing it in the market so that the health of customers is not compromised for the sake of the company's sales. The target market and advertising could be done in rather a different direction, targeting places of hangouts, clubs, etc.

However, I also feel that they took decent amount of time to investigate the European controversy properly, because it is better creating a havoc inside the company rather than among the world. Although, I would have disclosed this information because one way or the other information gets spread as fire. I would have then apologized to consumers. I would have assured them that our company has looked into the matter and fixed the issue and we would repay your loss and will help you with your medical bills. This way I would have somewhat regained the public's trust rather than later getting hate from the public. I would make sure that the product adheres to all the FDA regulations thereby making my product safe for consumption.

# STATEMENT OF PURPOSE

[Assignment No. 3]

Tushar Nankani  
Spring 2024  
UC Berkeley

Before setting my steps in my bachelors of Computer Engineering, the first programming language I learnt was Python, as a summer course. I built mini games and applications. I got inspired by Computer Systems when I understood I could begin programming anything from web applications to games that I enjoyed, and it was an intrigue that kept on developing as I explored more domains in my journey. My seniors were really helpful. They helped me understand the need of building projects globally for everyone to use, and not locally. It helped me set my foot in the domain of web development. I built multiple CSR and SSR web applications as a part of various Hackathons and worked with multiple clients. Soon, I realized the importance of data and explored data analytics. As a real-time project I built an Exhaustive WhatsApp Chat Data Analyser: a comprehensive analysis of any whatsapp chat to find out interesting insights. Apart from that, I have also collaborated on multiple projects and stepped into the world of open-source. I am really passionate about Development and Open Source. Being part of various open-source collaborations, being part of several college projects, teaming up with varied students, conversing with a plethora of experts and professionals in the industry, I feel I am on the right track to apply for the Master's program in Computer Science.

Along with my professional and academic life, I have also participated in cultural and athletic events, helping inculcate in me the various organizational skills. I have been an active part of an education based NGO - teaching and applying social emotional learning and life skills via art. I have also worked with the Swachhalay - An NGO working in association with UN Water under the guidance of the MP of Mumbai, India with an aim to spread awareness and make each and everyone involved about cleanliness and making all contribute their bit towards the society. It is connected to the United Nations, UN water and is affiliated under BJP.

I have had experience as a software engineer intern at JP Morgan Chase & Co. in my third year of engineering. I was working in the Web Domain, involved in the maintenance, accessibility and development across the globe in Routing and Charging. The project helped me learn about Web Development using C, C++, and JAVA platforms. This included handling a lot of data, providing and implementing charging voice services. The various innovative services include internet callback, televoting, and other such services.

In the coming years, I wish to become a software developer and programme a structure that can incorporate the most recently developed conventions so as to propel the field. Through this present Master's program in Computer Science, I will have the option to get what it takes that I should seek after my preferred profession in the innovation field and will improve my marketability as well as my skills necessary to become a software developer in the future.

The various research areas that I researched for UC Berkeley, I associate myself with Data Security, Data Mining, and related subjects. I have understood from the University's website that there are a number of research labs and centers, specifically the Center for Cybersecurity Research and Research Lab on Advanced Network.

The ultimate goal of mine is to make a commendable and constructive career in the field and contribute my bit to the society. A dedicated study in Computer Science would help me gain a lot of experience, along with adding to my previous knowledge on the subject. Being a part of the University of Texas will be an achievement that would motivate me towards my career goal. I look forward to getting an opportunity for an MS in Computer Science from your university.

# EMPLOYABILITY SKILLS

## [Cover letter and Resume]

[Assignment No. 4]

Draft cover letter and resume for an internship at Goldman Sachs.

3/36, Trimurti Apartments,  
North Avenue Road  
Santacruz - W  
Mumbai 400054

Goldman Sachs B1,  
Uswala Ln Cama Industrial Estate  
Goregaon-W  
Mumbai 400101

Dear Sir/Madam,

Subject: Application for the 2022 Summer Internship under Engineering Campus Hiring Program.

I want to express my excitable interest in the technical analyst internship at Goldman Sachs through the Hiring Program. The use of technology along with bank services differentiate Goldman Sachs from the rest and I would like to be a part of your ever-growing team.

I topped all the semesters in my college with an overall CGPA of 9.86, along with the curriculum. My keen interest is in problem-solving and web development. I have solved around 800+ problems across various websites and made a lot of projects. My enthusiasm towards learning new technology and implementing ideas makes me more confident. I'm certain that my skills and experience are suitable for your job requirements.

Goldman Sachs has always been my dream company to work at and I would be proud of it. Please have a look at my resume. It will describe my detailed skills and experience. I will be happy to present myself for an interview. Thank you for your attention and consideration. Looking forward to a positive response.

Sincerely,  
Tushar Nankani

# PROPOSAL WRITING

## [Short Proposal]

[Assignment No. 05]

Tushar Nankani

Shruti Nanwani

Trushant Narwani

Chinmay Palav

Prisha Panchmia

Devika Panjwani

Divya Panjwani

Draft a short proposal for a information security management system (ISMS) in cloud computing for healthcare asking for funds from The National Science Foundation.

### **Introduction**

Cloud computing is one of the most widely recognized themes of information systems research. Given the nature of the processed data, health-care organisations, in particular, must identify and treat specific risks related to cloud computing as part of their information security management system. As a result, we offer an architecture in this study that incorporates the most essential security processes in cloud computing in the health-care sector. The most important information security processes for health care organisations using cloud computing will be identified using a framework of general information security management processes derived from industry level standards, taking into account the main risks associated with cloud computing and the type of information processed. The identified procedures will assist a cloud-based healthcare business in focusing on the most critical information security management system processes and establishing and operating them with limited resources.

### **Aim**

As enterprise cloud adoption grows, business-critical applications and data migrate to trusted third-party cloud service providers(CSP's). Major CSPs offer standard cybersecurity tools with monitoring and alerting functions as part of their services, but in-house information technology staff may find these tools insufficient thereby increasing the risk of data theft and loss.

Putting the right cloud security mechanisms and policies in place is critical to prevent breaches and data loss, avoid noncompliance and fines, and maintain business continuity.



The aim of the information security management system is to centralize applications and data, thereby eliminating the need for dedicated hardware which reduces the organizations cost and management needs, while increasing reliability, scalability and flexibility.

## **Scope**

In recent years, cloud computing has evolved from a marketing gimmick to a legitimate option for traditional information computing. Some are already considering cloud computing as a natural progression in information security management systems. Keeping these things in mind, using cloud services is an important strategic decision. Basic advantages of cloud computing are the delivering of scalable computing services as a combination of hardware and software in a virtual environment. Moreover, the shared usage of computing resources by multiple users is a basic element of cloud computing. Cloud systems have shifted traditional software products towards new and service oriented solutions.

## **Plan**

In order to function successfully and efficiently, organisations must identify and handle a variety of operations. Any resource-intensive activity must be managed to allow for the transformation of inputs into outputs through a series of interconnected or interacting actions, which is referred to as a process. In other terms, a process is a collection of interconnected or interacting activities that changes inputs. This section outlines a recommended process structure for guiding information security initiatives in general, as well as a list of fundamental ISMS processes for cloud computing in health care.

The initial and most high-level process regarding ISMS is described as:

1. Obtaining management approval for initiating an ISMS
2. Defining scope and policy
3. Conducting organization analysis
4. Conducting risk assessment and risk treatment planning
5. Designing the ISMS.

The information security management system processes, which need to be designed, are

1. Information security risk assessment process which is an overall process of risk analysis and risk evaluation.
2. Information security risk treatment process which is a process to select and implement measures to modify risk; controls are now determined during the process of risk treatment.
3. Resource management process, which ensures that necessary resources are determined and provided.
4. Processes to assure necessary awareness and competence, where the process of creating awareness may be regarded as a form of communication.

5. Communication processes, including internal and external communication as well as marketing for the ISMS.
6. Performance evaluation process, containing monitoring (the performance of ISMS needs to be monitored in terms of verification and reporting of security control implementation), measurement (a measurement system used to evaluate performance in information security management and feedback suggestions for improvement needs to be established), analysis, and evaluation.

The process begins with a requirements management process which provides relevant requirements as an input for the information security risk assessment process. Another process which provides continuous input for the assessment of risks is the information security incident.

Given that cloud computing in its various models is a form of outsourcing of information computing services, the process to control those outsourced processes is key to information security.

## **Technology used**

Service-Oriented Architecture (SOA) allows organizations to access on-demand cloud-based computing solutions according to the change of business needs. It can work without or with cloud computing. The advantages of using SOA is that it is easy to maintain, platform independent, and highly scalable.

Service Provider and Service consumer are the two major roles within SOA.

There are two major roles within Service-oriented Architecture:

**Service provider:** The service provider is the maintainer of the service and the organization that makes available one or more services for others to use. To advertise services, the provider can publish them in a registry, together with a service contract that specifies the nature of the service, how to use it, the requirements for the service, and the fees charged.

**Service consumer:** The service consumer can locate the service metadata in the registry and develop the required client components to bind and use the service. Services might aggregate information and data retrieved from other services or create workflows of services to satisfy the request of a given service consumer. This practice is known as service orchestration. Another important interaction pattern is service choreography, which is the coordinated interaction of services without a single point of control.

## Budget

Sr. No.	Item	Number	Cost per Unit	Total
<b>1. Travel</b>				
a	Professional Conferences	4	10,000	40,000
b	Travel	10	5,000	50,000
c	Accommodation	8	20,000	1,60,000
<b>2. Salaries and Wages</b>				
a	Academic Personnel	5	50,000	2,50,000
b	Research Assistants	2	40,000	80,000
<b>3. Equipments</b>				
a	Laptop	4	40,000	1,60,000
b	Desktop	2	50,000	1,00,000
c	Internet server	2	12,000	24,000
d	Projector	1.	10,000	10,000
<b>4. Software Requirements</b>				
a	Monthly AWS usage	2	15,000	30,000
<b>Total:</b>				<b>9,04,000</b>

## **Conclusion**

The primary goal of this project is to research on the various security issues regarding information computing in health care environments. The indicated procedures of information security risk assessment, information security risk treatment, control of outsourced processes, and requirements management should be prioritised by health care companies employing cloud computing. Particularly for these processes an adequate level of experience is needed. It is necessary to develop a more detailed framework of ISMS processes (input, output, and interfaces) and their interaction at an activity level to ensure an appropriate interaction of the ISMS processes. Securing your data is the most important step one can take and we think you'll agree that the value this security framework will add to the security management in cloud-based scenarios is priceless.

As a result, a health-care organisation that uses cloud computing should concentrate on the recognised procedures of information security risk assessment, risk treatment, process control, and requirements management. A sufficient level of maturity is required for these processes in particular.

# **TECHNICAL PAPER WRITING**

**[IEEE Technical Paper]**

[Assignment No. 6]

Write an IEEE Technical Paper on Benefits of AWS in Modern Cloud

# Benefits of AWS in Modern Cloud

Tushar Nankani, Shruti Nanwani, Trushant Narwani, Chinmay Palav, Prisha Panchmia,  
Devika Panjwani, Divya Panjwani

B. E. (Computer Engineering) Students, Thadomal Shahani Engineering College, Mumbai, India

**Abstract-** This article gives an overview of the benefits of AWS in the modern cloud. Cloud computing is performing well in today's World and boosting the ability to use the internet more than ever.

Cloud computing gradually developed a method to use the benefits of it in most of the organizations. It is very demanding in all businesses tasked with improving the quality of service and reducing costs as the organization pays for the service only what they consume based on the incoming and outgoing traffic.

**Keywords:** Data, Cloud, AWS, Access Management, Compliance, Effectiveness, Scalability, Piracy, Flexibility, AWS cloud, Amazon Glacier, Amazon S3, Amazon Elastic Block Storage, Amazon EC2 Instance Storage, AWS Import/Export, AWS Storage Gateway, Amazon CloudFront, Amazon SQS, Amazon RDS, Amazon DynamoDB, Amazon ElastiCache, Amazon Redshift, Amazon Neptune, AWS Database Migration Service, AWS Database Migration Service, AWS Cloud Design Strategy

## I. Introduction

The benefits of AWS in the modern cloud are huge. Data protection, regulatory compliance, quantifiability, flexibility, cost-effectiveness, multiple storages, auto-scaling, access to the data anytime, data-centric encryption, high-performance processing are few benefits of AWS cloud. Let's understand the importance of the AWS cloud in detail to get the best idea of it.

**Data Protection:** Data is the most important asset in any organization. Data leakage can cause a huge loss in the organization, so every organization thinks about data privacy at the first point to protect their sensitive data. Not following the guidelines of data protection may cause loss or theft of company intellectual property, damage to the organization's reputation, corporate or individual penalties and compromising the system to hacking or malware infection vulnerabilities. The authorized use of cloud environment in the organization and the capability to transfer sensitive evidence into and throughout, the cloud plays a vital role for industries to function and work proficiently, speedily and without any restrictions. But this capability must be maintained by an inclusive data safety approach which AWS cloud maintains by using security controls and processes. The below AWS best approaches can be followed for data storage and protection:

- Implement data encryption/hashing on the device and server.

- Sensitive local data stored encrypted with user secret that encrypts the data encryption key.
- Use NIST (National Institute of Standards and Technology) approved encryption standard algorithms to encrypt the sensitive data.
- Encryption keys shall never be in RAM. Instead, keys should be generated real-time for encryption/decryption as needed and discarded each time.
- No sensitive data (e.g. passwords, keys etc.) in cache or logs.
- Use remote wipe APIs.
- Do not reveal UDID (unique device identifier), MSISDN (Mobile Station International Subscriber Directory Number), IMEI (International Mobile Equipment Identity) and PII (Personally Identifiable Information).

**Access Management:**

- Regulate access to cloud resources at a granular level:  
Using enlightened strategy users and groups can be created to regulate the access management, for example, user, resource, IP address, time of day that means the deployment is done using AWS cloud is secure  
AWS IAM permits to generate and accomplish users and groups, as well as use authorizations to regulate access to AWS resources like Amazon S3 storage stacks, Amazon EBS snapshots, or Amazon DynamoDB tables.
- Integrate with current individuality and access management systems:  
Combining the current individuality and access management systems means that there is no need to go through the procedure of generating equivalent sets of individualities in the cloud. Individualities in the current systems can be used to give access to the resources in the AWS cloud.

**Regulatory Compliance:** Compliance needs to be established for every day checkpoints, not just during inspections and audits. Most of the organizations are accomplishing compliance by going back to security essentials, by automating the processes for artificial intelligence, cleaning the data into their operations. The below approaches for Authentication, Authorization and Session Management can be followed to prove the compliance and minimize the business risks.

- Strong password policy
- Validate password and sessions if the application needs to work in offline mode
- Use salted password

- CAPTCHA during registration
- Unique session tokens to form valid and unique message payloads
- Corporate approved encryption/hashing algorithms
- Two-factor authentications (in case of financial transactions to be performed.)
- Lower timeout for the inactive session
- Server-side authentication for sensitive transactions.
- Validate all messages/payloads received at the backend / mobile application server and prevent message replay attacks. These messages/payloads should be encrypted and should have a combination of padding elements, session identifiers, and timestamps.

**Flexibility:** The key benefits of cloud computing are its flexibility. Business in the organization can scale up or scale down and the data loads may need quick modification which is very flexible in AWS cloud. That way cloud computing permits the employees to be more flexible. Employees can access files anywhere using web-enabled devices such as laptops, smartphones, notebooks etc. The capability to instantaneously share documents and other files over the internet can also assist support in the association. Cloud computing allows the use of mobile technology. Enterprise mobility management tools can provide valuable administrative capabilities and protect the organization from phone loss, accidental data loss or weak passwords, necessary visibility into today's modern security risks, including malware and other device-centric attacks. AWS cloud permits the business to straightforwardly upscale or downscale its current resources to accommodate business requirements which enables to support the business development without exclusive changes of current systems. Flexibility is one of the key factors why companies move their business to the cloud.

**Cost Effectiveness:** One of the most important benefits of cloud computing is considerable savings in organizations cost. By moving to cloud computing, industries can save extensive capital costs through minimizing spending on infrastructure, equipment, and software. Cloud permits to rent extra processing power over the Internet without having to use million-dollar machines as servers. Spending a lot of money on the hardware, software or licensing and renewal fees, many companies are showing interest to move to cloud environments and getting benefited saving the cost. The company just needs to pay on the usability and the traffic, if the platform is not used then the company saves the money. AWS cloud needs minimum asset the start the service and less expensive than the on-premise installations.

**Secure backend services and platform:** Secure backend services and platform: The benefit of the AWS cloud is that it permits customers to scale and transform while sustaining a protected environment. Customers pay only for the facilities they use, meaning that customer has a secure

backend service and the platform, but deprived of the upfront expenditures, and at a lower cost than in an on-premises environment. There are few AWS cloud benefits for secure backend services listed below.

- Implement Protected Backend API'S or facilities
- Secure data allocation between the cloud and web-server back-ends and other external interfaces
- Server and infrastructure inurement
- Maintain and monitor application server logs
- Access control for cloud platform

**Increase productivity:** Previously the time is mostly spent on the software installation, working on the maintenance of the product and take the back up on daily basis. Cloud has solved most of these problems where software installation is not needed, most of the maintenance is done by Amazon team, back up are automated. Anyone from anywhere with proper access can log in to the company's cloud platform. A lot of time can be solved using a cloud platform which increases productivity. The acceptance of the cloud has been determined by the digitization of the Corporate World, which has exponentially added to the amount of data, plans, and arrangements that an organization needs to manage to keep up. The cloud proposes the best way to keep the business planned and ground-breaking, and productions have stated back strong outcomes. A survey was initiated and found that 79% of the users reported higher revenue growth using a cloud platform.

**Increase Scalability:** To know how the organization will grow and what is the future is one of the business's major challenges. The cloud has opened prospects for the organization to grow in their business. The cloud is scalable which is essential for a business to grow. Whether more resources are needed or less, cloud instances can promptly adapt the needs. On-premise infrastructure takes days or weeks to set up the connection and maintain the hardware and software. Comparatively, the cloud is very easy as this resides over the internet, so it increases the scalability. AWS also supports Dynamo DB auto-scaling; the capacity allocation can be optimized for cost and usage. Read/Write capacity units for each of the DynamoDB tables can be consumed and analyzed to determine the minimum, maximum capacity allocation for autoscaling. For different backbiting and data prep, scalability is a major factor, it's mandatory to tune the system for maximum performance and scalability. There are usually a few key considerations when it comes to scalability for a performant environment to support enterprise data backbiting which AWS cloud supports:

- When there is huge volume of data
- Data access interface (e.g. Files, APIs)
- Number of concurrent users
- Type of backbiting operations and use cases (e.g. structuring, blending, profiling)
- Hardware configuration (number of nodes, network setup)

No to Piracy: Using AWS cloud platform can prevent software piracy incessantly. The illegal copying of the data is a violation of any company. It may cause loss or theft of a company's intellectual property and damage the company reputation. So, every company needs to follow some security practices to reduce the risks and mitigate threats. New cloud environments are treated establishing new data centers. AWS cloud has all applicable security controls and processes in place which solves the problems of security risks and mitigate the threads.

Advanced technology and career opportunities: Cloud is the presence of IT. AWS Cloud allows organizations to arrange advanced real-time services and accomplish significant profits

and productivity developments. Understanding of AWS cloud is not that difficult as Amazon documentation is available easily. Organizations need a great arrangement of additional control and flexibility over the technologies they develop, they need the AWS cloud platform that could provide more flexibility and also be innovative for the future. The cloud platform is scalable, extensible, and scattered architecture which is easy to build and maintain. Most of the maintenance is done by the Amazon team and back up are automated. Manual tasks can be reduced which is a progressive approach in all organizations now a day. It is not overload the network and supports strong security management, system validation, and easy to get subscription authorization as cost is based on the usages. Anyone from anywhere with proper access can use the online cloud. As the cloud is over the internet, employees needn't install and run on the computer as on-premise services. The career opportunities are exiting as there are so much to learn, innovate in this platform.

Make life easier: Life is full of taking various decisions. If you run a business, then you must contribute a lot on daily basis to succeed in the business. Same for any organizing as every organization faces challenges in the business and taking the right decision is very important. With the benefit of AWS cloud, anyone can be confident that he is taking the very right decision for the company growth and to achieve the goal. The below points will explain why AWS cloud make life easier.

- **Financial Savings:** In on-premise software company must own the hardware and servers which are expensive for long run and maintenance is tough. But in the cloud, the payment is made based on the usages of the services. Think about if a company could reduce the expenses by preventive their requirement for the hardware they use, IT system maintenance, downtime, and even the quantity of energy usage. Using the AWS cloud, over a period, it can offer some incredible saving assistance. Cloud permits to rent extra processing power over the Internet without having to use million-dollar machines as servers.

- **Flexibility:** As mentioned above flexibility of cloud

is one of the reasons why it makes life easier. To work efficiently business needs to familiarize most circumstances in a timely manner to succeed in the business. Anyone with proper access can log in to cloud from anywhere anytime and move the information one environment to another environment – no longer controlled by restrictions of using hardware.

- **Disaster recovery:** With the benefit of a cloud-based platform, the company is secured as data is protected and to succeed in the industry is easy compared to using the on- premise platform. AWS cloud assists to resolve the issues encountered very speedily and proficiently so the customer needs to take less tension for troubleshooting any issue. If the electricity has gone and data is not saved, they must start from scratch. Using the AWS cloud, the company no longer needs to concern itself with losing the data when not saved. Once the data is uploaded in a cloud it is protected in a secure location which makes life easy in any business. By using AWS cloud, a company makes multifaceted and time- consuming adversity retrieval plans of the past.

- **Communication and Association:** Communication and association between employees are essential for company growth. One incredible advantage of cloud computing is the capability to progress communication and collaboration within a group. By adapting to the cloud platform, employees have all the required resources they need to work proficiently from anywhere irrespective of where they are positioned or which strategies they're using. The cloud will permit instant circulation of pertinent material to everybody within the organization who have access to the cloud platform, guaranteeing continuous output.

- **Multiple Storages:** Does anyone remember the floppy disk as a storage device? The DVD and 2 GB of the hard disk was a big thing during the starting of Y2K. Now a day a normal system uses more than 1 terra byte of data. Very few of us use a pen drive to copy any file from one computer to another. Cloud is the present and cloud is the future. Today no one needs to worry about storing the data as the cloud is easily accessible. Even in smartphones, data can be stored in the cloud so if the phone is lost, the data is still available in the cloud and accessible from anywhere with the cloud user id and password. Also, needn't be worried about data security.

Storage options in AWS cloud: Designers of traditional, on-premises IT infrastructures and applications have many possible data storage selections, including the following:

- **Memory - In-memory storage,** such as a file, object, databases caches, and RAM disks, deliver quick access to the data.

- **Message Queues - Provisional robust storage** for data not sent synchronously between computer systems or application components.



- Storage area network (SAN) - NAS storage offers a file-level boundary to storage that can be collected across numerous structures. NAS tends to be slower than either SAN or DAS.
- Direct-attached storage (DAS) - Local hard disk drives or collections of data exist in each server deliver advanced performance than a SAN, but lower robustness for provisional and tenacious files, database storage, and operating system (OS) boot storage than a SAN.
- Network attached storage (NAS) - NAS storage offers a file-level boundary to storage that can be collected across numerous structures. NAS tends to be slower than either SAN or DAS.
- Databases - Organized data is classically stored in a database, such as a traditional SQL relational database, a NoSQL non-relational database, or a data warehouse. The fundamental database storage naturally exists in SAN or DAS devices, or in some cases in memory.
- Backup and Archive - Data booked for backup and archival purposes is naturally stored on non-disk media such as tapes or visual media, which are generally stored off-site in isolated protected sites for disaster recovery.

All the above storage options vary in performance, robustness, and price, as well as in their interfaces. Architects must study and understand all these aspects when recognizing the right storage resolution for the task at hand. When it comes to AWS cloud, they offer multiple storage options Each has an exclusive combination of performance, robustness, accessibility, price, and interface, as well as other features such as scalability, flexibility, elasticity. These extra features are crucial for web-scale cloud-based platforms.

- Amazon Glacier: Amazon Glacier is for long-term storage which is very secure and durable object storage. 10 GB of Amazon Glacier data recoveries per month for free. The free layer payment can be used at any time during the month and applies to standard recoveries of the stored files.
- Amazon S3: Amazon Simple Cloud Storage Service is to store the standard files which are secure, durable and scalable object storage infrastructure. Mostly one-month recent data can be stored in S3, other old files move to Amazon Glacier for future retrieval. S3 can have
  - 5 GB of standard storage
  - 20,000 Get requests
  - 2,000 Put requests
- Amazon Elastic Block Storage (EBS): Amazon Elastic Block Storage can be insistent, durable, low-latency block-level storage volumes for EC2 instances. Elastic Block Storage can have
  - 30 GB of Amazon EBS: any combination of general purpose (SSD) or magnetic

- 2,000,000 I/O (with EBS magnetic)
- 1 GB of snapshot storage

Amazon EC2 Instance Storage: Temporary block storage volumes for Amazon EC2 (Elastic Compute Cloud) virtual machines. EC2 instance storage offers temporary block-level storage for the instances and these storages are placed in the disk that is physically attached to the host computer. StorReduce supports storing unstructured data to Amazon Simple Storage Service (Amazon S3) or Amazon Glacier on AWS to minimize the cost. The below diagram shows how the

## II. Requirements

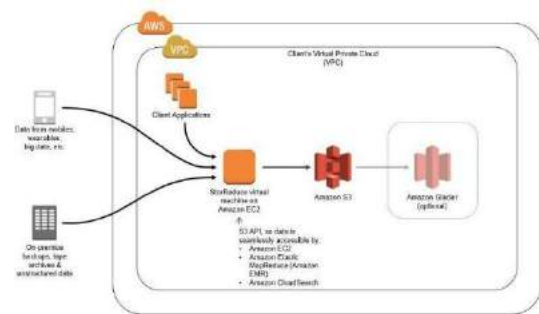


Fig1: Workflow of StorReduce [14]

The factors that should be considered when it comes to requirements for games are usually CPUs which can compute heavy tasks, GPUs which can handle graphically intensive workloads. But the thing about Collider is that it can be run on pretty much any device, that too both online and offline.

We believe that gaming should be for everyone, so we have tried to develop this game keeping in mind the fact that not everyone can afford expensive computers. Our game is compatible with most modern laptops or computers.

**AWS Import/Export:** This is a service which is used to transfer a large volume of data from the physical storage device into AWS.

**AWS Storage Gateway:** Permits on-premises environments to use AWS cloud storage.



Fig2: Overview of file storage deployment for Storage Gateway [15]

Amazon CloudFront: Globally circulated network of proxy servers.

Amazon SQS: Simple Queue Service (SQS) is message queue service used by distributed systems to exchange messages.

Amazon RDS: Relational database service for MySQL, Oracle, MS SQL server.

Amazon DynamoDB: NoSQL database which is highly predictable and scalable. Amazon ElastiCache: This is a fully managed in-memory data store and cache service. Amazon Redshift: Data warehouse service fully managed, fast and powerful.

Databases on Amazon EC2: Self-managed database on an Amazon EC2 instance.

Backup Options: AWS backup is a complete backup service that makes it easy to integrate and automate the back up of data across AWS cloud platform using AWS storage gateway. AWS back up completely managed by policy back-up solution, simple to use, allow to meet the compliance requirements in the business and very secure. There are huge benefits, some are listed below.

- Centrally manage backups: Arrange backup strategies from a central backup console, streamlining backup management and creating it easy to confirm that the application data across the AWS platform is backed up and secured. AWS Backup’s central console can be used, APIs, or command line interface to backup, reinstate, and set backup maintenance policies across AWS platform in the cloud and on-premises using the AWS Storage Gateway.

- Automate backup processes: Time and money can be saved, and manual error can be avoided using the automate backup processes. AWS Backup’s completely manageable, policy-based solution. AWS Backup offers automated backup agendas, maintenance, and development, eliminating the need for routine scripts and manual

procedures. With AWS Backup, backup policies can be applied to the AWS resources by simply classifying them, making it easy to develop the backup strategy across all AWS resources and confirming that all application data is properly backed up.

- Improve backup compliance: By applying the backup policies, encode the backups, and review backup actions from a centralized console to assists meet up the backup compliance necessities. Backup policies make it simple to line up the backup strategy with internal or monitoring necessities. AWS Backup secures backups by encrypting data during transfer and at rest. Joined backup action logs across AWS services makes it easier to achieve compliance audits. AWS Backup is PCI and ISO compliant as well as HIPAA eligible.

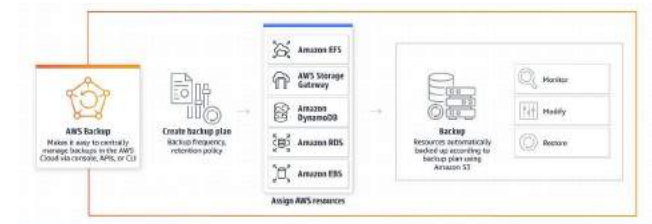


Fig3: Workflow of automatic backup in AWS cloud [17]

Speed up the workflows: Speed up the workflows: Another benefit of cloud that is it helps to take lesser time to complete the project. Sometimes the project takes a longer time to complete an employee become less productive. Cloud solves that problem as it takes lesser time, so employees can get motivated doing the work. With robust teamwork, project supervision, client satisfaction, and using other cloud tools, employees can complete the tasks which take less time. Anyone with proper access can log in to the cloud environment from anywhere which speed up the workflows. Employees can work smartly to get the work done. If there is any error, the troubleshooting is very easy as the clear logs will be CloudWatch. If needed Amazon support can be involved to troubleshoot the issue so overall, it’s easy to maintain which move faster in any project using cloud platform.

A business procedure is characterized as a workflow shown in the diagram below. Applications frequently include a workflow as stages that must take place in a predefined direction, with prospects to correct the flow of information based on certain results or special suitcases.

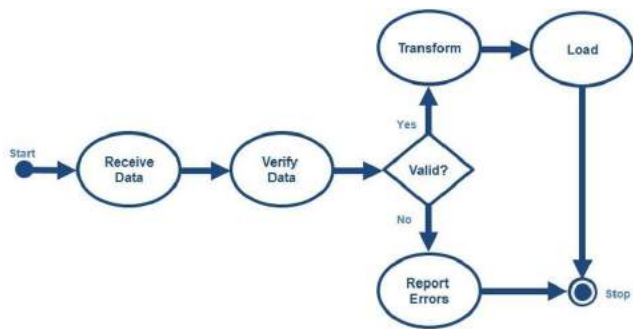


Fig4: ETL workflow [18]

Minimize IT workload: Using cloud platform the IT team in the company no longer have to be busy with the IT infrastructure, servers or computers, installing new software licenses as everything will be in the cloud. A central management system is introduced in the cloud which lets immediate pushes for any updates and licensing, and the Amazon team has the ability to fix the problems remotely which minimize the IT workload in the organization.

- Cloud has the capability to schedule automatic jobs and application deployment which reduces the manual work.
- Understand the potential of big data and accomplish workloads in accessible ways.
- Secure development for file transfer operations, immediate status visibility, and automatic retrieval of data.
- Allow DevOps association with a Jobs-as-Code method for quicker submission and deployment series periods.
- No downtime upgrades to remove business disruption and risk.

Let's take an example of how AWS cloud minimizes the workload. An important part of any web application is static content. This contains tapes, image, text, and other content that varies occasionally, web servers are migrated to EC2 instances and host all contents static and dynamic. Introducing static content from an EC2 instance experiences several costs including the instance, EBS volumes, and likely, a load balancer. By moving static content to S3, the cost can be expressively reduced the amount of computing required to host your web applications. In many cases, this change is non-disruptive and can be done at the DNS or CDN layer, needing no change to your application.

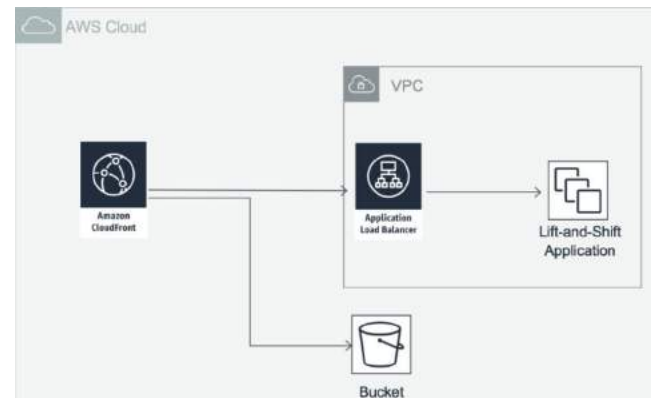


Fig5: Reducing web hosting costs with S3 static web hosting [19]

Different databases in AWS Stack: AWS database stack gives access to the competences of a familiar MySQL, Oracle, SQL Server, or PostgreSQL database engine. Scripts, applications, and tools that already being used with the existing databases can be used with Amazon RDS. Automatically patches the AWS database software and backs up the company data. 7 database types are used under AWS now.

- Amazon Aurora - Relational Database Built for the Cloud
- Amazon RDS - Managed Relational Database Service for MySQL, Oracle, SQL Server, and PostgreSQL
- Amazon DynamoDB - Fast, Predictable, Highly-scalable NoSQL data store.
- Amazon ElastiCache - In-Memory Caching Service.
- Amazon Redshift - Fast, Powerful, Fully Managed, Petabyte-scale Data Warehouse Service.
- Amazon Neptune - Fast, Reliable, Fully-managed graph database service that makes it easy to build and run applications that work with highly connected datasets.
- AWS Database Migration Service – This service helps to migrate the databases to AWS effortlessly and securely, the source database stays fully functioning during the migration, reducing downtime to applications using the database.

### 3.1 Hardware Requirements

The game can be run on a PC which has a CPU of Intel Core i3 4<sup>th</sup> Gen or above, at least 4GB of RAM and GPU with Intel HD 3000 or above. These are

the minimum hardware requirements needed to run the game offline.

### 3.2 Software Requirements

In order to run the game offline, it can be downloaded from GitHub on Windows 10 or MacOS.

In order to run the game online, a browser that is compatible with WebGL 2.0 can be used. Most current modern browsers support this requirement.

### III. Conclusion

Getting edge over the competition: AWS cloud is an advanced technique and more successful in a competitive situation. Many entities, executives, computer scientist, apps designers, corporations and industrialists use cloud computing in this competitive world. The available resources can be used to speed up the process which helps to build a good relationship with the customer and help to expand the business. Enchanting inventiveness in the execution of cloud computing in business gets ached from competition and opponents. That is one of the reasons why the cloud is essential to integrate into the project.

The facilities are trembling up the computing world in a similar technique that Amazon is varying in the retail industry. By making its cloud very less expensive, Amazon can offer reasonable and scalable facilities to everybody from the latest start-up to a Fortune 500 company.

Also, as we mentioned earlier the flexibility and scalability are the key reasons why AWS cloud is different from any other cloud platform. In AWS cloud the collections of objects can work together and distinctly.

There are so numerous different services are listed below -

- Compute
- Storage
- Database
- Migration
- Machine Learning
- Media Service
- Management Tools
- Game Development and even more

In AWS cloud you pay which service you choose. In another cloud platform, whether the services are used or not, payment must be done for all. That is the advance of the AWS cloud and make this different from any other providers.

### REFERENCES

- [1] G. Aldering, G. Adam, P. Antilogus, P. Astier, R. Bacon, S. Bongard, C. Bonnaud, Y. Copin, D. Hardin, F. Henault, D.A. Howell, J. Lemonnier, J. Levy, S.C. Loken, P.E. Nugent, R. Pain, A. Pecontal, E. Pecontal, S. Perlmutter, R.M. Quimby, K. Schahmanche, G. Smadja and W.M. Wood-Vasey, Overview of the Nearby Supernova Factory, in: The Society of Photo-Optical Instrumentation Engineers (SPIE) Conference, J.A. Tyson and S. Wolff, eds, Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series, Vol. 4836, SPIE, Bellingham, WA, 2002, pp. 61–72.
- [2] Amazon Web Services, <http://aws.amazon.com/>.
- [3] Amazon EBS, <http://aws.amazon.com/ebs/>.
- [4] Amazon EC2, <http://aws.amazon.com/ec2/>.
- [5] Amazon S3, <http://aws.amazon.com/ebs/s3/>.
- [6] E. Angerson, Z. Bai, J. Dongarra, A. Greenbaum, A. McKenney, J. Du Croz, S. Hammarling, J. Demmel, C. Bischof and D. Sorensen, LAPACK: a portable linear algebra library for high-performance computers, in: Proceedings of Supercomputing' 90, IEEE, New York, NY, 2002, pp. 2–11.
- [7] C. Aragon, S. Poon, G. Aldering, R. Thomas and R. Quimby, using visual analytics to develop situation awareness in astrophysics, Information Visualization 8(1) (2009), 30–41.
- [8] M. Armbrust, A. Fox, R. Griffith, A. Joseph, R. Katz, A. Konwinski, G. Lee, D. Patterson, A. Rabkin, I. Stoica et al., Above the clouds: a Berkeley view of cloud computing, Technical Report UCB/EECS-2009-28, EECS Department, University of California, Berkeley, CA, 2009.
- [9] CFITSIO, <http://heasarc.nasa.gov/docs/software/fitsio/fitsio.html>.
- [10] <http://www.klientsolutech.com/importance-of-cloud-computing-worldwide/>
- [11] <https://www.itproportal.com/2013/05/02/top-10-tips-why-you-should-use-the-cloud-and-how-to-do-it-securely/>
- [12] file:///C:/Users/chakrmx2/Downloads/BTS%20Mobile%20App%20Security%20Guidelines.pdf
- [13] <https://www.stratoscale.com/blog/cloud/9-ways-cloud-improves-productivity/>
- [14] Fig1: <https://aws.amazon.com/blogs/apn/cloud-deduplication-on-demand-storage-reduce-an-apn-technology-partner/>
- [15] Fig2: <https://docs.aws.amazon.com/storagegateway/latest/userguide/StorageGatewayConcepts.html>
- [16] [https://aws.amazon.com/choosing-a-cloud-platform/#content\\_distribution](https://aws.amazon.com/choosing-a-cloud-platform/#content_distribution)
- [17] Fig3: <https://aws.amazon.com/backup/>
- [18] Fig4: <https://aws.amazon.com/blogs/big-data/automating-analytic-workflows-on-aws/>
- [19] Fig5: <https://aws.amazon.com/blogs/architecture/optimiz>

- ing-a-lift-and-shift-for-cost/  
 [20] Fig7: <https://aws.amazon.com/autoscaling/>  
 [21] Fig 8 & 9:  
[https://media.amazonwebservices.com/AWS\\_Disaster\\_Recovery.pdf](https://media.amazonwebservices.com/AWS_Disaster_Recovery.pdf)  
 [22] Mukherjee, S. (2019). How IT allows

- E-Participation in Policy-Making Process. arXiv preprint arXiv:1903.00831.  
 [23] Mukherjee, S. (2019). Popular SQL Server Database Encryption Choices. arXiv preprint arXiv:1901.03179



# INTERPERSONAL SKILLS

[Assignment No 7.1]

Describe a situation when you were assigned to work with people, who did not contribute effectively to the given task. How did you handle the situation using emotional intelligence, conflict resolution & negotiation skills (Use CAR framework to answer the question.)

“The true test of leadership is how well one functions in a crisis.” As a freshman, I took part in one of my first major Hackathons, I didn't really have teammates at that point in time, so I looked for members looking for a team on DevPost, where I found the Hackathon. After some days and an exchange of a few emails, I found a team - a backend developer from Slovakia, and a full stack developer from India. In the 36 hour Hackathon, we ended up utilizing 12 hours just for planning, due to the time zones. We were taking too much time, and at that point, nothing was making sense. I stood up and chose to look at the bigger picture and lead the project.

I used to have early meetings with the team from India designing and coding the front-end and late-night meetings to build the backend with the member from Slovakia. I also took an hour out - to explain VCS and GitHub, since we had to use that for collaboration. When the results came out, we were in the TOP 25 of the global Hackathon.

After that, there was no going back. I started having the sense of responsibility, the vision it took, to look at the bigger picture and also how the smaller things matter: leading tasks and delegating smaller subtasks. Being part of various open-source collaborations, being part of several college projects, teaming up with varied students, here is what I have realized - Communication is the key to everything.

It is rightly said, “If your actions inspire others to dream more, learn more, do more, and become more, you are a leader.” Leadership is about people; it has nothing to do with any title. Being a leader is not easy. Each person is diverse from the other and comes from a diverse foundation, and has a distinctive thought process, and being able to identify that I wish to be a leader in my community of people.

# INTERPERSONAL SKILLS

[Assignment No 7.2]

## Leadership Questionnaire

**Name: Tushar Nankani**

**Group: C2**

*Directions:* the following items describe aspects of leadership behavior. Respond to each item according to the way you would most likely act if you were the leader of a work group. Circle whether you would most likely behave in the described way always (A), frequently (F), occasionally (O), seldom (S), or never (N). Once the test is completed, go back to number 2 under Implementation.

A	F	O	S	N		1.	I would likely act as the spokesperson of the group.
A	F	O	S	N		2.	I would encourage overtime work.
A	F	O	S	N		3.	I would allow members complete freedom in their work.
A	F	O	S	N		4.	I would encourage the use of uniform procedures.
A	F	O	S	N		5.	I would permit the members to use their own judgment in solving problems.
A	F	O	S	N		6.	I would stress being ahead of competing groups.
A	F	O	S	N		7.	I would speak as representative of the group.
A	F	O	S	N		8.	I would needle members for greater effort.
A	F	O	S	N		9.	I would try out my ideas in the group.
A	F	O	S	N		10.	I would let the members do their work the way they think best.
A	F	O	S	N		11.	I would be working hard for a promotion.
A	F	O	S	N		12.	I would tolerate postponement and uncertainty.
A	F	O	S	N		13.	I would speak for the group if there were visitors present.
A	F	O	S	N		14.	I would keep the work moving at a rapid pace.
A	F	O	S	N		15.	I would turn the members loose on a job and let them go to it.



A	F	O	S	N		16.	I would settle conflicts when they occur in the group.
A	F	O	S	N		17.	I would get swamped by details.
A	F	O	S	N		18.	I would represent the group at outside meetings.
A	F	O	S	N		19.	I would be reluctant to allow the members any freedom of action.
A	F	O	S	N		20.	I would decide what should be done and how it should be done.
A	F	O	S	N		21.	I would push for increased production.
A	F	O	S	N		22.	I would let some members have authority which I could keep.
A	F	O	S	N		23.	Things would easily turn out as I had predicted.
A	F	O	S	N		24.	I would allow the group a high degree of initiative.
A	F	O	S	N		25.	I would assign group members for to particular tasks,
A	F	O	S	N		26.	I would be willing to make changes.
A	F	O	S	N		27.	I would ask the members to work harder.
A	F	O	S	N		28.	I would trust the group members to exercise good judgement.
A	F	O	S	N		29.	I would schedule the work to be done.
A	F	O	S	N		30.	I would refuse to explain my actions.
A	F	O	S	N		31.	I would persuade others that my ideas are to their advantage.
A	F	O	S	N		32.	I would permit the group to set its own pace.
A	F	O	S	N		33.	I would urge the group to beat its previous record.
A	F	O	S	N		34.	I would act without consulting the group.
A	F	O	S	N		35.	I would ask that group members follow standard rules and regulations.

## *MORE THOUGHTS IN MOTIVATION*

*With each of the following do you agree (A) or disagree (B)?*

1. Satisfaction and motivation are frequently confused. ( A )
2. Performance more often leads to satisfaction than satisfaction leads to performance. ( A )
3. A motivated worker can be a dissatisfied worker. ( A )
4. Research has shown that satisfied workers are not necessarily productive workers. ( B )
5. The same rewards are equally meaningful to all. ( B )
6. A satisfied worker can be very unmotivated. ( A )
7. The only way to get a person to do something is to make the person want to do it; motivation must come from within. ( B )
8. If a person is doing X and you reward Y, then X will gradually be extinguished. ( B )
9. By changing the consequence of a behavior, I can change that behavior. ( A )
10. Sharing in goal setting, participation in decisions, open communications are required for commitment. ( A )
11. No organization can depend solely on intrinsic motivation, i.e. work that is challenging, responsible and growthful, unless it is completely populated by people who value intrinsic rewards. ( A )
12. Commitment to objectives is a function of the rewards associated with their achievement. ( B )
13. Only individuals have motivation, not groups or organizations. ( B )
14. To be motivated, workers must feel that their pay is fair both in itself and relative to the pay of others. ( B )
15. All in all, motivation is complex and depends on the characteristics of: (a) the person; (b) the job; (c) the environment. ( A )

# VERBAL APTITUDE TEST

[Assignment No. 8]

## Exercise 1: Grammar:

**Instructions for questions 1 - 11:** From among the given alternatives choose the one that best completes the sentence.

1. Truth and honesty are the best policy.

(1) are            (2) is

2. Fish and rice are his favourite food.

(1) are            (2) is

3. Your car and mine are both at the door.

(1) are            (2) is

4. Neither Maradona nor the referee is guilty.

(1) are            (2) is

5. The garage with the car was sold.

(1) were            (2) was

6. The state of affairs in the city was such as to cause disturbance to normal life.

(1) were            (2) was

7. Each of the alleged terrorists was arrested.

(1) were            (2) was

8. Neither of the alibis are convincing.

(1) are            (2) is

9. The military is still under the command of the ousted head.

(1) are            (2) is

10. Gymnastics is a difficult sport to master.

(1) is            (2) are

11. A large number of rioters were arrested.

(1) was            (2) were

**Instructions for questions 12 - 17:** Determine whether the given sentences are grammatically correct (option 1) or incorrect (option 2).

12. My father and my brother is in the office. incorrect

13. Each of you have been allotted separate plots of land. incorrect

14. Ten chocolates costs five rupees. correct

15. The first few pages of the text has been copied. incorrect

16. Which are your pair of scissors? incorrect

17. Neither he nor his friend know how to play the game. incorrect

**Instructions for questions 18 - 24:** Identify the correct sentence.

18. (1) Bread and pickle are not a good combination.

(2) **Bread and pickle is not a good combination.**

(3) Bread and pickle be not a good combination.

19. (1) Both the government and the opposition is interested in governance.

(2) Neither the government nor the opposition are interested in governance.

(3) **Neither the government nor the opposition is interested in governance.**

20. (1) Not only the CEO but his executives was also insulted.

(2) **The CEO as well as his executives was insulted.**

(3) The CEO as well as his executives are insulted.

21. (1) Neither Raj nor his cousin were invited for the big event.

(2) **Neither Raj nor his cousin was invited for the big event.**

(3) Neither Raj nor his cousin are invited for the big event.

22. (1) **Whose is this dirty pair of socks?**

- (2) Whose are these dirty pair of socks?  
 (3) Whose were these dirty pair of socks?
23. (1) According to him, fifty dollars are not a neat sum.  
 (2) According to him, hundred dollars be a neat sum.  
 (3) According to him, hundred dollars is a neat sum.
24. (1) None of them was present.  
 (2) Neither of them were present.  
 (3) Neither she nor her friend were present.

## Exercise 2: Analogies:

**Instructions for questions 1 to 7:** From the following words, identify which word will make a similar analogous relationship as the first pair.

1. PLANTS : BOTANY :: INSECTS :

- (1) Epidemiology    (2) Entomology    (3) Helminthology    (4) Carpology

2. PULP : PAPER :: HEMP :

- (1) Basket    (2) Yarn    (3) Cotton    (4) Rope

3. HORSE : NEIGH :: HYENA :

- (1) Chatter    (2) Talk    (3) Laugh    (4) Howl    (5) Roar

4. BREW : BEER :: DISTILL :

- (1) Milk    (2) Oil    (3) Butter    (4) Bread

5. NEEDLE : KNIT :: LOOM :

- (1) Weave    (2) Sew    (3) Thimble    (4) Stitch    (5) Darn

6. COHERENT : CONSISTENT :: IRATE :

- (1) Rage    (2) Irritated    (3) Unreasonable    (4) Cantankerous    (5) Hostile

7. ELEPHANT : CALF :: FISH :

- (1) Fawn      (2) Fry      (3) Cub      (4) Roe      (5) Fillet

**Instructions for question 8 to 13:** Each of the following questions consists of two capitalized words that have a certain relationship to each other, followed by a certain pair of words. Choose the pair that is RELATED to each other in the same way as the capitalized pair.

8. SATURN : PLANET

- (1) Star : Sun                      (2) Fig : Apple                      (3) Moon : Satellite  
(4) Europe : Asia                  (5) Comet : Meteor

9. INDEX: INDICES

- (1) Object : Symbol                  (2) Male : Female                  (3) Worker : Tool  
(4) Female : Male                  (5) Singular : Plural

10. WHITE: PEACE

- (1) Object : Symbol                  (2) Male : Female                  (3) Singular : Plural  
(4) Female : Male                  (5) Worker : Tool

11. ANVIL: SMITH

- (1) Fire : Mason                      (2) Cement : Mortar                  (3) Shoes : Cobbler  
(4) Wickets : Cricketer              (5) Hammer : Carpenter

12. FOX: VIXEN

- (1) Goose : Gander                  (2) Drake : Duck                      (3) Thoroughbred : Stallion  
(4) Horse : Colt                      (5) Sheep : Coyote

13. FISH : PISCES

- (1) Air : Libra                          (2) Elements : Clue                  (3) Crab : Cancer  
(4) Lion : Capricorn                  (5) Libra : October

**Exercise 3: Jumbled Sentences:**

**Instructions for questions 1 – 3:** Each of the questions below consists of a paragraph in which the first and last sentences are identified. Choose the option that has the most logical order of the intermediate sentences.

1. A. World War II, was a global military conflict, the joining of what had initially been two separate conflicts.  
B. The other began in Europe in 1939 with the German invasion of Poland.  
C. This global conflict split the majority of the world's nations into two opposing military alliances: the Allies and the Axis Powers.  
D. The first began in Asia in 1937 as the Second Sino-Japanese War.  
E. The Allies included USA, UK, France, Russia etc.  
F. Whereas Axis powers included mainly Germany, Italy and Japan.

(1) **DBCE**    (2) CEBD    (3) BCDE    (4) DBEC    (5) CBED

2. A. Bal Gangadhar Tilak was an Indian nationalist, social reformer and freedom fighter.  
B. "Swaraj is my birth right, and I shall have it!"  
C. He is reverently addressed as Lokmanya.  
D. He is known as "Father of the Indian unrest."  
E. This quote of his is well-remembered in India even today.  
F. It means "Beloved of the people" a title that is well deserved.

(1) BCDE    (2) **DBEC**    (3) DBCE    (4) EBCD    (5) CDEB

3. A. 'Chakra' is a Sanskrit term meaning circle or wheel.  
B. They are considered to be a point or nexus of metaphysical and/ or biophysical energy of the human body.  
C. Theories on chakras fit within systems that link the human body and mind into a single unit, sometimes called the body mind or 'namarupa'.  
D. Chakras are commonly described as energy centers in the spine located at major branches of the human nervous system, beginning at the base of the spinal column and moving upwards to the top of the skull.  
E. There is a wide literature on chakra models, philosophy, and lore that underpin many philosophical systems and spiritual energy practices, religious observance, and personal discipline.  
F. These philosophical theories and models were first codified in Ancient India

(1) **DBEC**    (2) DCEB    (3) BCED    (4) BECD    (5) CBED

**Instructions for questions 4 - 7:** Each of the questions below consists of a set of labelled sentences. These sentences, when properly sequenced, form a coherent paragraph. Choose the most logical order of sentences from among the options.

4. A. According to this philosophy, acquiring the awareness of Brahavidya (direct perception or awareness of Reality) alleviates this deep source of suffering.

- B. The Indian philosophy of Advaita Vedanta explains that we suffer as a avidya (ignorance) and maya (misconceived, misinterpreted views of Reality).
- C. Only this awareness directly leads us to moksha (liberation).
- D. Brahmailidya, thus is an ancient system of Yoga and Philosophy, which helps eliminate suffering.

(1) ACDB (2) ADBC (3) BDCA (4) **BACD** (5) BADC

5. A. It describes the lives of the young March sisters.  
 B. 'Little women' is a beloved classic.  
 C. It is an ambition she is destined to fulfil.  
 D. Meg is a young girl who settles into quiet domesticity.  
 E. However Jo, her sister, longs to be a famous author.

(1) ABCDE (2) **BADEC** (3) BCDAE (4) BAECD

6. A. Unfortunately it is not limited to only the geriatric age group.  
 B. Children as young as 10 years may have this disease.  
 C. One of the commonest chronic diseases in old age is Diabetes.  
 D. However in them, it is usually of type1.

(1) CBDA (2) **CABD** (3) CADB (4) BADC

7. A. Rising sea levels swamped the coastal regions.  
 B. Forests replaced open woodlands and grasslands across the continent.  
 C. The Ice Age was ebbing.  
 D. About 12000 years ago, warmer, wetter weather was beginning to take hold.  
 E. As their habitats disappeared, so did the bison and the mammoth.

(1) CDABE (2) **DCABE** (3) DCBEA (4) BEDCA (5) ABDCE



# Book Report

[Assignment No. 9]

Write report on COMPARATIVE STUDY OF AMAZON WEB SERVICES (AWS)  
AND GOOGLE CLOUD PLATFORM (GCP)

## 3. JOB TRENDS

Talking about the Job trends in AWS and GCP, the study shows that there have been more job postings in AWS than in GCP.

Now, this could be a direct result of the early establishment and large market shares of AWS. With 40 percent market shares, AWS clearly has had more job opportunities than GCP since 2015 till now, but that does not mean GCP can't take over AWS in the future. GCP is still fairly young. With the growth rate at which GCP is making progress, it wouldn't be a surprise if in a while GCP takes over AWS in the case of job trends.

Before we go ahead and start weighing the pros and cons of both, one thing is for sure: Whoever comes out as the winner, GCP is a serious contender for AWS. While AWS might be leading in terms of the number of customers, services, products, and market shares, GCP also tends to take the lead in terms of competitive as well as cost-effective pricing models and more customization options.

And if you consider the trust factor, then AWS, with its 5 years of a head start, surely does enjoy more trusted relationships with its clients. On the other hand, Google with its reputation for developing world-leading products surely makes Google Cloud Platform seem promising. So, all things considered, it would be better to say that the choice between Google Cloud vs AWS comes down to personal preference.

## 4. PRICING AND REVENUE

Pricing is a factor that gears up profits in the supply chain through an appropriate match of supply and demand. Revenue management can be defined as the application of pricing to increase the profit produced from a limited supply of supply chain assets.

### 4.1 Pricing Models

AWS Pricing is per hour basis and GCP is based on per-minute basis. Here's a comparison between the pricing models of AWS and GCP on the basis of the machine type that they offer.

Machine Type	AWS	GCP
Smallest Instance	In the case of AWS, a very basic instance that includes two virtual CPUs and 8 GB of RAM will cost you around US\$69 per month.	Compared to AWS, GCP will provide you the most basic instance, containing two virtual CPUs and 8 GB of RAM, at a 25 percent cheaper rate. So, it will cost you around US\$52/month.
Largest Instance	The largest instance offered by AWS that includes 3.84 TB of RAM and 128 vCPUs will cost you around US\$3.97/hour.	GCP takes the lead here with its largest instance that includes 3.75 TB of RAM and 160 vCPUs. It will cost you around US\$5.32/hour.

If you conclude here, then GCP definitely comes out as the winner in regard to pricing models. GCP offers billing on a per-second model which is way more cost-efficient as compared to AWS' per-hour model billing. And not to forget, GCP even offers long-term usage discounts with no upfront costs.

As mentioned in the table above, with GCP, users get to save 25 percent per month on the same basic instance that AWS offers. The following graph depicts the percentage of savings in GCP when used in the long term.

By providing almost 50 percent cost efficiency, the winner here in case of pricing is Google Cloud Platform.

## **4.2 Google Cloud vs AWS: Cloud Revenue**

Data from the past few years has been clear, and the latest Q2 2019 data is no different. According to Synergy Research Group, AWS controls 33% of cloud market share while GCP controls 8%. What does this look like in revenue? AWS had Q2 revenue of \$8.4B, while GCP's Q2 revenue was undisclosed but they did reveal they have an \$8B annual revenue run rate, which can be estimated to be \$2B per quarter.

# **POWERPOINT PRESENTATION**

[Assignment No. 10]

Make a powerpoint presentation on A Comparative Study of Amazon Web Services (AWS) and Google Cloud Platform (GCP).

# Cloud Computing Services



# Group Members

**Tushar Nankani**

**Shruti Nanwani**

**Trushant Narwani**

**Chinmay Palav**

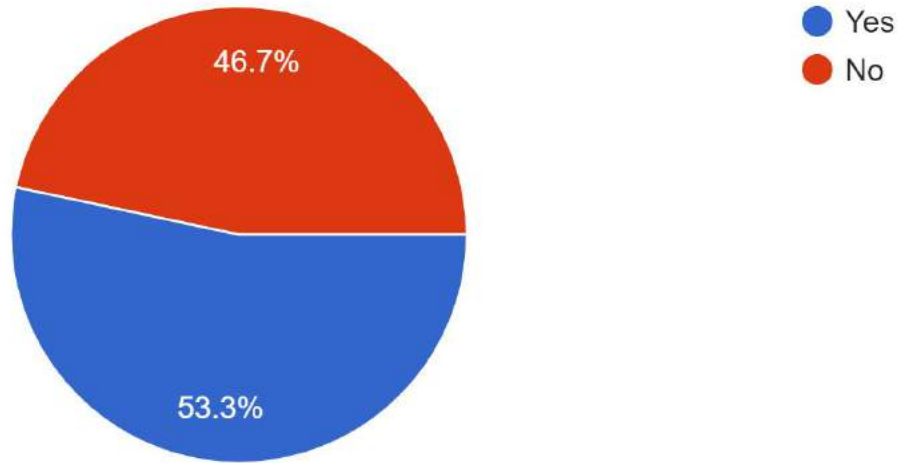
**Prisha Panchmia**

**Devika Panjwani**

**Divya Panjwani**

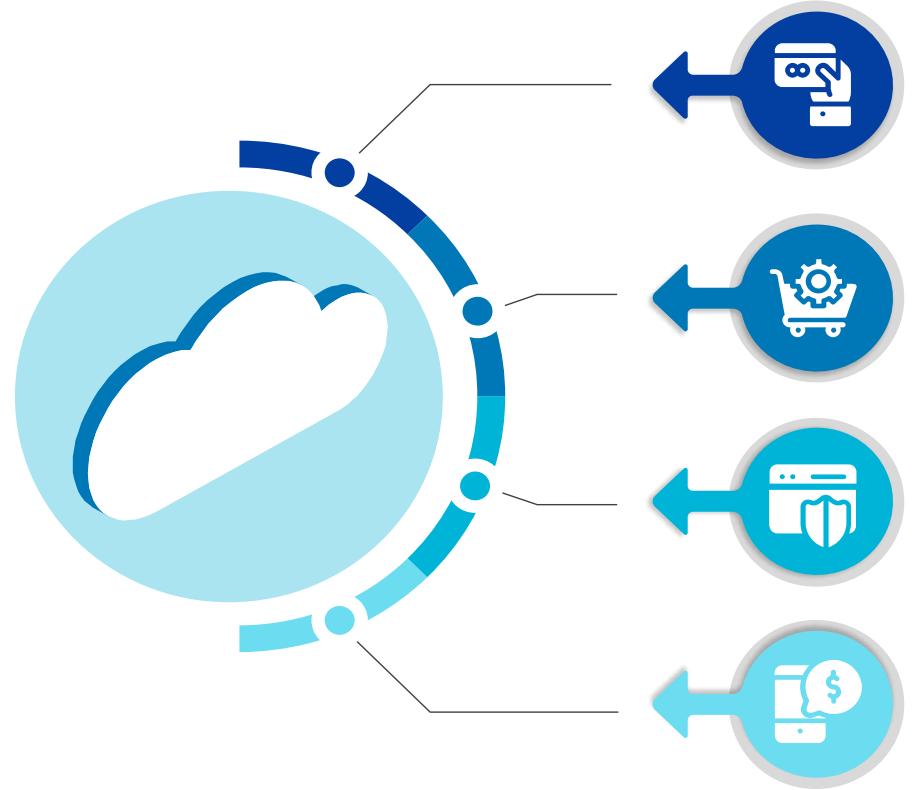
# Survey

Do you use cloud computing services?



# Introduction

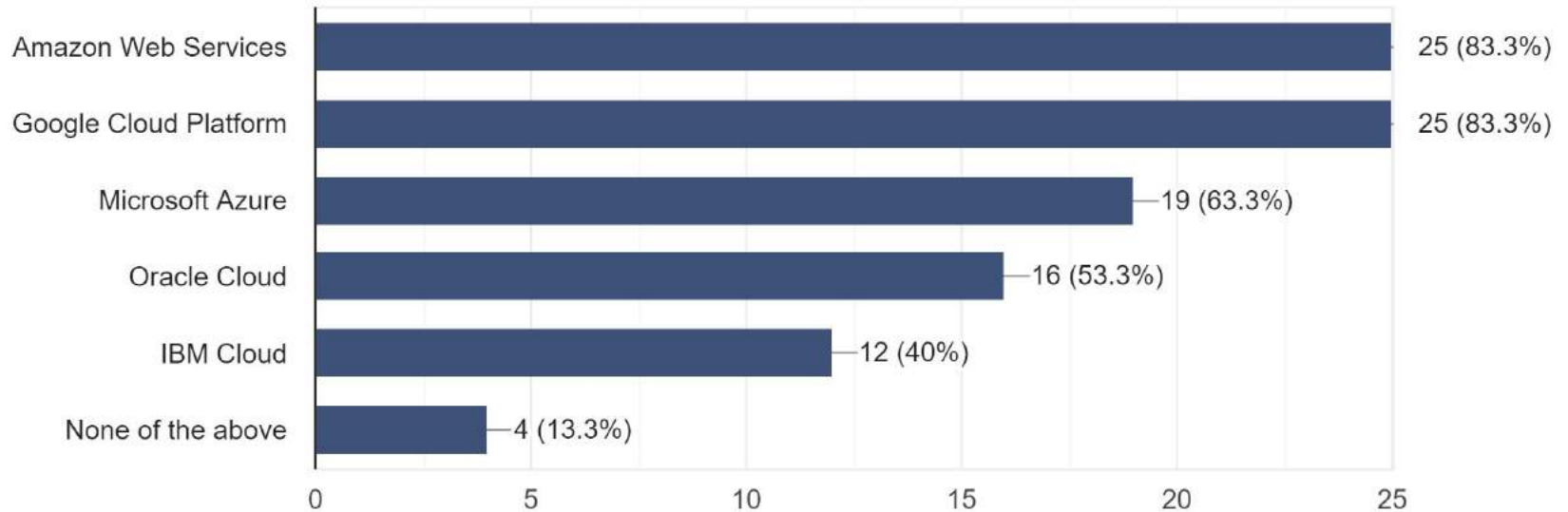
The "cloud" refers to servers that are accessed over the Internet, and the software and databases that run on those servers





# Survey

Which of the following cloud services are you aware of



# A Comparative Study of Amazon Web Services (AWS) and Google Cloud Platform (GCP)



# Topics Covered

- **Features**
- **Job Trends**
- **Pricing and Revenue**
- **Backup and Storage**
- **Survey**
- **Conclusion**



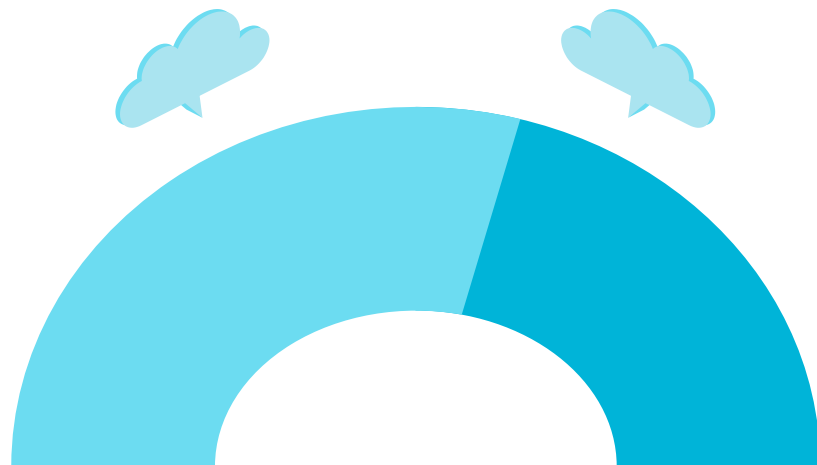
# AWS and Google Cloud Platform

## AWS

Amazon Web Services (AWS) is a comprehensive, evolving cloud computing platform provided by Amazon

## GCP

Google Cloud Platform (GCP) is a suite of public cloud computing services offered by Google.



# Features of Google Cloud Platform

- Strong Infrastructure for the Future
- High Powerful Data and Analytics
- Cloud Debugger
- Andromeda
- Maintenance



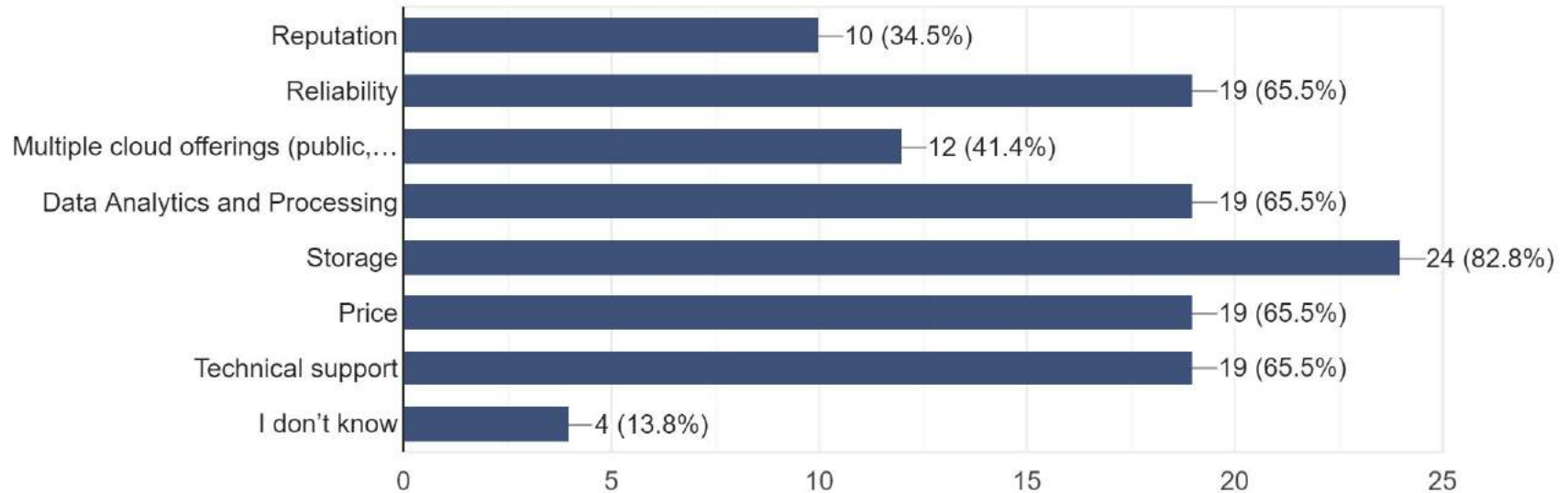
# Features of Amazon Web Services

- Flexibility
- Cost-effective
- Scalable and Elastic
- Secure
- Storage



# Survey

What are important factors in your choice of a cloud service? (Check all that apply)



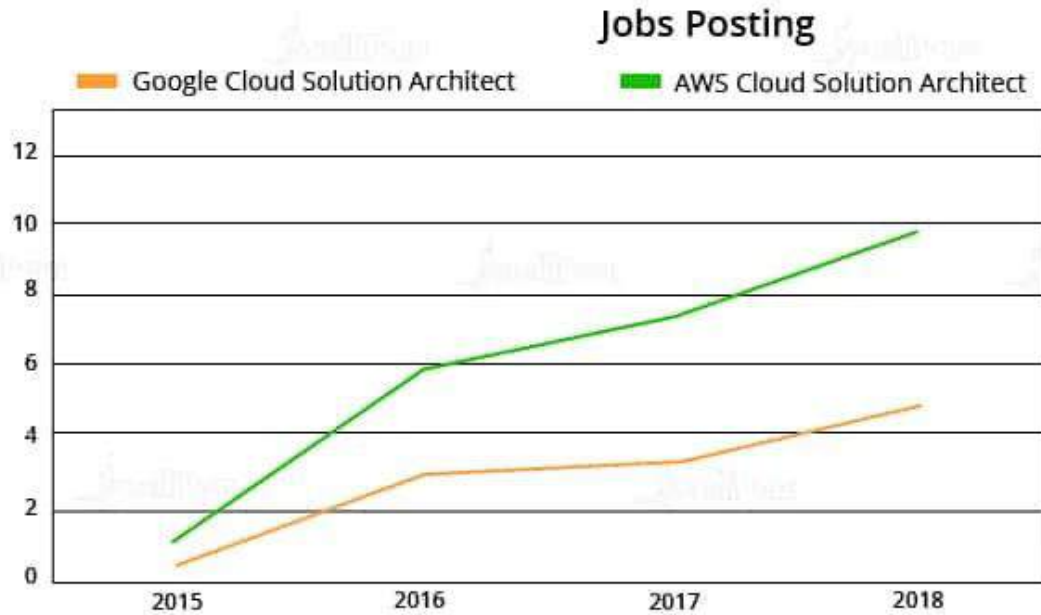
# Job Trends

- With 40 percent market shares, AWS clearly has had more job opportunities than GCP since 2015 till now
- With the growth rate at which GCP is making progress, it wouldn't be a surprise if in a while GCP takes over AWS in the case of job trends



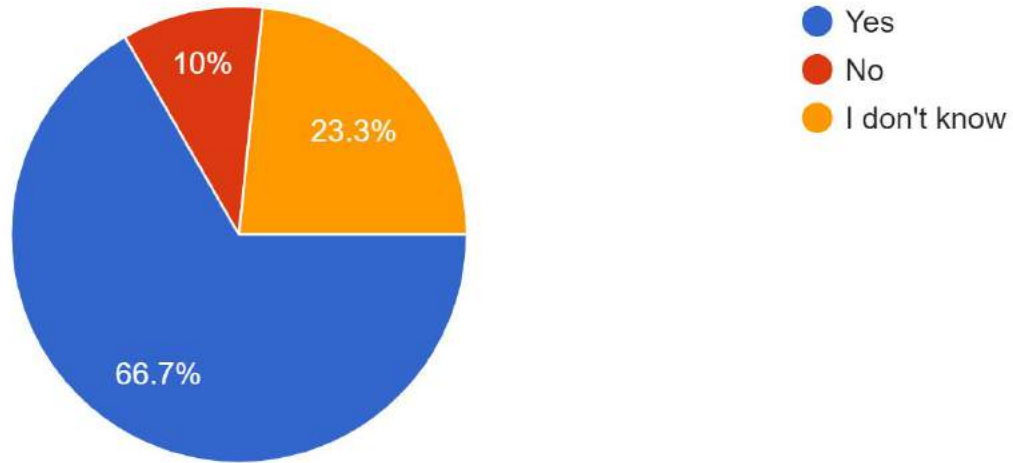


# Job Trends



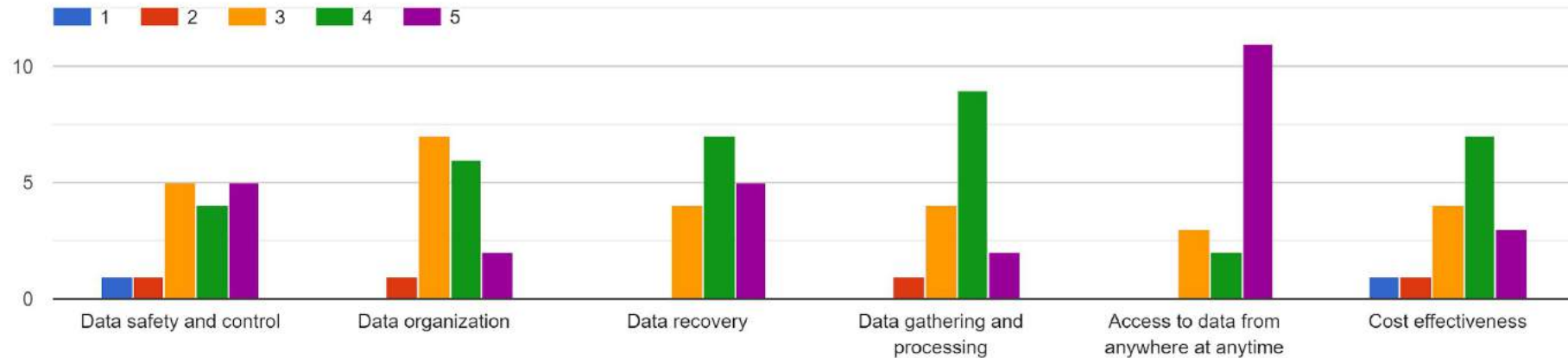
# Survey

Do you think that the data stored in the cloud system is safe?



# Survey

On a scale of 1 to 5, how big of an advantage are the following factors of cloud computing (1 – I do not consider it as an advantage at all to 5 – I consider it as a big advantage)



# Backup and Storage of GCP

- Transition to lower cost classes easily
- Multiple redundancy options
- Easily transfer data to cloud storage
- Storage classes for any workload



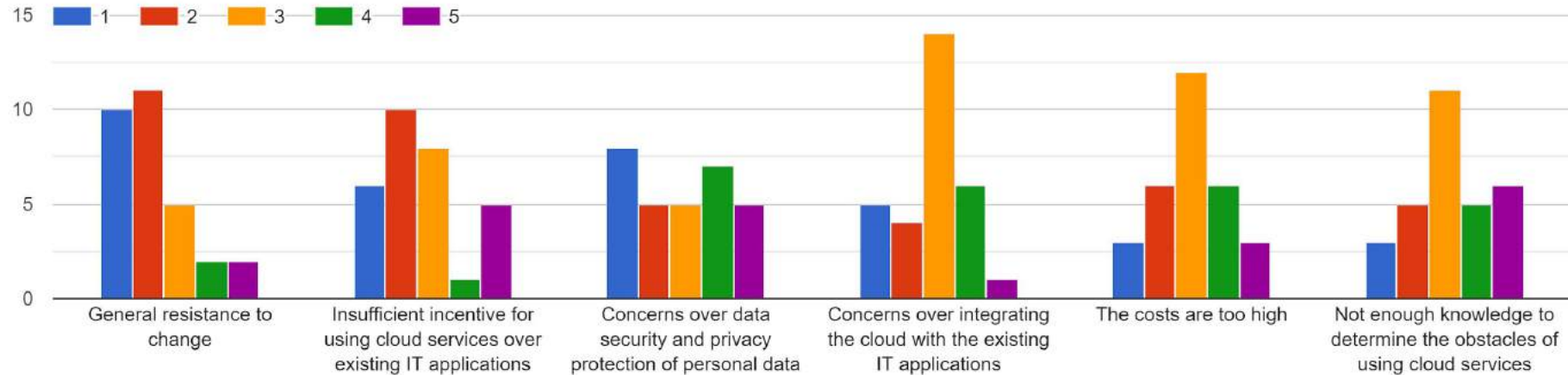
# Backup and Storage of AWS

- Object storage
- File storage
- Block storage
- Backup
- Data transfer
- Edge computing and storage



# Survey

Point out to the reasons for not using cloud services (1 - minor disadvantage to 5 - major disadvantage)



# Pricing and Revenue

AWS Pricing is per hour basis and GCP is based on per-minute basis. Here's a comparison between the pricing models of AWS and GCP on the basis of the machine type that they offer.



# Pricing and Revenue

Machine Type	AWS	GCP
Smallest Instance	<ul style="list-style-type: none"><li>• Two virtual CPUs</li><li>• 8 GB of RAM</li><li>• Cost - around US\$69 per month.</li></ul>	<ul style="list-style-type: none"><li>• Two virtual CPUs</li><li>• 8 GB of RAM</li><li>• Cost - around US\$52/month.</li></ul>
Largest Instance	<ul style="list-style-type: none"><li>• 3.84 TB of RAM</li><li>• 128 vCPUs</li><li>• Cost - around US\$3.97/hour.</li></ul>	<ul style="list-style-type: none"><li>• 3.75 TB of RAM</li><li>• 160 vCPUs</li><li>• Cost - around US\$5.32/hour.</li></ul>





# Conclusion

- Price and flexibility
- Global reach
- Support, availability, and greater redundancy

Before deciding you should understand what type of feature your organization needs and how much you want to pay for them.



**THANK YOU**

## Decision Making:-

Be true to yourself.

You are your own judge.

We know our strength & weaknesses.

Identify the problems & then decide the needful accordingly.

Evaluate your decisions & options that you have.

What are your short term and long term objectives?

Will you be making money.

Always have a plan B ready.

## Developing a plan:-

Making a plan

Discussion about execution of that plan.

## Communicating the decision

→ Releasing information

→ Avoid secrecy.



# BCE Lecture Notes

Page No.	
Date	

Resume - 1482 - Leonardo da Vinci  
Resume is never complete, you have to keep it updating.

U can't just use one resume for all kind of jobs.

It should be in reverse chronological that is reverse (latest) first.

Use minimum abbreviations  
ATS (Applicant Tracking System)

Don't use underlines in resume

Don't use examples in resume

Don't put salary expectation or previous salary in your work experience

Grammatically correct, no typos

Max - 2 pages (depends on company)

CV comes (origins) from a latin word

Most of the stress is due to time management (important factor)



# Presentation Skills

Page No.

Date

Purpose should be very clear to the presenter

Cheatsheets → 3 by 5 notecards.  
Give examples.

Always number the cheatsheet cards on top right with a big font-size.  
Don't over-rehearse.

Presentation:-

Speech

Body-language

Equipment

Environment.

Non-verbal communication:-

Stress.

Punctuation should be there in speech.

Don't just read the slides

Vocal & sound are 2 different things.

Wear something that suits your personality.  
Don't use fillers.

Take a long pause instead of fillers.  
Silence helps a lot.

Always place collar-mic between 2<sup>nd</sup> & 3<sup>rd</sup> button.

1<sup>st</sup> button being collar-button.

Design your conclusion in way that listeners are only listening it & not your prior presentation.

For text → not more than 3 colors

Make the last slide <sup>(close)</sup> first.



## Proposal Writing:-

- \* Clarity in thoughts is very important.
- \* Keep your deadline atleast 5 day (depends) before the actual deadline.
- \* Do not write proposal unless you are 100% sure.

### Formal Proposal:-

Abstract  $\Rightarrow$  Outline of proposal  
Institution resources should be good and available.

#### Biographical data sheet:-

Information related to that specific document (proposal)

Work History  $\rightarrow$  only related to proposal topic

### Short - Informal Proposal:-

Personnel & budget sections are omitted.

Plans  $\rightarrow$  do not have timings, it has methodology

Schedule  $\rightarrow$  Timings for executing the plan.

### Trade Decent:-

- \* Must have a commercial application
- \* Different from patent

Choosing a leader:-

Don't use political or random/arbitrary methods like voting.

Choose leader based on it's qualities, appropriate skills & performance.

Beginning A GD:-

Opening speaker → maximum uninterrupted time

Concluding a GD:-

Summarize discussion, add other persons viewpoints, conclude → if possible

normally a person who is fulfilling many positive roles emerges as a leader unnoticed:-

Poor listeners → clown

■ In a GD observers do not exist, don't look at observers.

Don't start with contradictory words like I contradict, I oppose, I disagree.

Don't contradict a person, contradict a point.

Do not introduce yourselves like → Myself.



# Meeting Documentation

Page No.	
Date	

## Document - Meeting Types:-

- i) Notice
- ii) Agenda
- iii) Minutes

### Notice →

last line → The agenda is attached  
in only one paragraph.

Meeting is organised by secretary but he never participates in meeting.

August 10, 2021  
~~Date~~

### NOTICE

The agenda is attached.

Secretary

3 lines ≤ Address ≤ 5 lines  
1 line after everything.

## Agenda Format:-

1 line gap  
2.04  
2.05

ABC DEF

Secretary,

Minutes:- (only meant for internal circulation)  
(Summary)

ii) Minutes of narration.

date for next meeting:-

meeting signs → should be signed within 30 days otherwise they become null & void. Once signed they become legal documents.

## Types of Meetings:-

One of Meeting

Public Meeting (open to anyone)

↑ Only one point in agenda.

Conference

↑ no questions asked to present



External Meeting - Confidentiality)

AGM - Yearly gathering

↳ (normally in March or early April)  
↳ Annual general meeting.

EGM - (Extraordinary General Meeting)

How to select a meeting?

- ↳ Purpose
- ↳ Consideration
- ↳ Type.

9 lectures → max

group activities → all

groups → roll number wise,

group → each of 7 students.

upload notes after each lecture.

PT 1 → group discussion.

For presentations → dress code

our notes & submissions = attendance.

75% + attendance required.

### Report Writing:-

PPT will be uploaded by mam.

Report → originated from latin word.

Report → reporting for a business

→ ii) In past tense.

Objectivity & Clarity & other things.

Next Week:-

Come prepared with 3 topics each group with guidelines.

For Report:-

Academic Search

Gather Info

Research

\*, Can even create an own technology.

Can research on existing technology.

Present facts & not our own opinions.