**DAILY ASSESSMENT FORMAT**

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| **Date:** | **14-July-2020** | **Name:** | **Bhuvanesh M** |
| **Course:** | **Matlab Onramp** | **USN:** | **4AL16EC015** |
| **Topic:** | **Logical arrays in Matlab** | **Semester & Section:** | **8th sem & ‘A’ section** |
| **Github Repository:** | **Bhuvan** |  |  |

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| **FORENOON SESSION DETAILS** | | |
| **Image of session** |
| **What is Big Data?**  Data is information that comes from a variety of sources, such as people, pictures, text, sensors, and web sites. Data also comes from technology devices like cell phones, computers, kiosks, tablets, and cash registers. Most recently, there has been a spike in the volume of data generated by sensors. Sensors are now installed in an ever growing number of locations and objects. These include security cameras, traffic lights, intelligent cars, thermometers, and even grape vines!  Big Data is a lot of data, but what is a lot? No one has an exact number that says when data from an organization is considered “Big Data.” Here are three characteristics that indicate an organization may be dealing with Big Data:   * They have a large amount of data that increasingly requires more storage space (volume). * They have an amount of data that is growing exponentially fast (velocity). * They have data that is generated in different formats (variety).   How much data do sensors collect? Here are some estimated examples:   * Sensors in one autonomous car can generate 4,000 gigabits (Gb) of data per day. * An Airbus A380 Engine generates 1 petabyte (PB) of data on a flight from London to Singapore. * Safety sensors in mining operations can generate up to 2,4 terabits (TB) of data every minute. * Sensors in one smart connected home can produce as much as 1 gigabyte (GB) of information a week.   While Big Data does create challenges for organizations in terms of storage and analytics, it can also provide invaluable information to fine-tune operations and improve customer satisfaction. **What Are the Challenges of Big Data?** IBM’s Big Data estimates conclude that “each day we create 2.5 quintillion bytes of data”. To put this into context, every minute of every day:   * We upload over 300 hours of YouTube video. * We send over 3.5 million text messages. * We stream over 86 thousand hours of Netflix video. * We like over 4 million Facebook posts. * We request over 14 million forecasts from The Weather Channel.   The rapid growth of data can be an advantage or an obstacle when it comes to achieving business goals. To be successful, enterprises must be able to easily access and manage their data assets.  With this enormous amount of data being constantly created, traditional technologies and data warehouses cannot keep up with storage needs. Even with the cloud storage facilities that are available from companies like Amazon, Google, Microsoft, and many others, the security of stored data becomes a big problem. Big Data solutions must be secure, have a high fault tolerance, and use replication to ensure data does not get lost. Big Data storage is not only about storing data, it is also about managing and securing it. **Where Can We Store Big Data?** Big data is typically stored on multiple servers, usually housed within data centers. For security, accessibility, and redundancy, the data is usually distributed and/or replicated on many different servers in many different data centers.  **Fog Computing**  Fog computing is an architecture that utilizes end-user clients or “edge” devices to do a substantial amount of the pre-processing and storage required by an organization. Fog computing was designed to keep the data closer to the source for pre-processing.  Sensor data, in particular, can be pre-processed closer to where it was collected. The information gained from that pre-processed analysis can be fed back into the companies’ systems to modify processes if required. Because the sensor data is pre-processed by end devices within the company system, communications to and from the servers and devices would be quicker. This requires less bandwidth than constantly going out to the cloud. **The Cloud and Cloud Computing** As mentioned before, the cloud is a collection of data centers or groups of connected servers. Access to software, storage, and services available on the servers is obtained through the Internet via a browser interface. Cloud services are provided by many large companies such as Google, Microsoft, and Apple. Cloud storage services are provided by different vendors such as: Google Drive, Apple iCloud, Microsoft OneDrive, and Dropbox.  From an individual’s perspective, using the cloud services allows you:   * To store all of your data, such as pictures, music, movies, and emails, freeing up local hard drive space * To access many applications instead of downloading them onto your local device * To access your data and applications anywhere, anytime, and on any device   One of the disadvantages of using the cloud is that your data could fall into the wrong hands. Your data is at the mercy of the security robustness of your chosen cloud provider.  From the perspective of an enterprise, cloud services and computing support a variety of data management issues:   * It enables access to organizational data anywhere and at any time. * It streamlines the IT operations of an organization by subscribing only to needed services. * It eliminates or reduces the need for onsite IT equipment, maintenance, and management. * It reduces the cost of equipment, energy, physical plant requirements, and personnel training needs. * It enables rapid responses to increasing data volume requirements. |