**DAY 12 ASSIGNMENT**

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| **Date:** | **30-05-2020** | **Name:** | **Ashish Shanbhag** |
| **Course:** | **Logic Design** | **USN:** | **4AL16EC008** |
| **Topic:** | **Applications of Programmable logic controllers** | **Semester & Section:** | **8th A** |
| **Github Repository:** | **Ashish Shanbhag** |  |  |

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| **FORENOON SESSION DETAILS**      **Applications of Programmable logic controllers**  A PLC (programmable logic controller) is a digital computer used for industrial automation to automate different electro-mechanical processes. It was introduced to eliminate issues such as high power consumption that arose from the use of relays to control manufacturing processes. It consists of a programmed microprocessor whose program is written on a computer and later downloaded via a cable to the PLC. The program is stored in a non-volatile PLC memory.  **How does a PLC work?**  The programmable logic controller receives information from connected input devices and sensors, processes the received data, and triggers required outputs as per its pre-programmed parameters. Based on its inputs and outputs, a PLC can easily monitor and record runtime data like operating temperature, machine productivity, generation of alarms when a machine fails, automatic start and stop processes and more. This means that PLCs are robust and flexible manufacturing process control solutions that are adaptable to most applications.  **PLC key features**  Key features of a programmable logic controller include:   * **I/O**: The CPU retains and processes data while the input and output modules connect the PLC to the machinery. I/O modules provide the CPU with information and trigger specified results. I/O modules can be analog or digital. Note that I/O can be mix-matched to achieve the right configuration for an application. * **Communications**: Apart from input and output devices, PLCs must connect with other system types. For instance, a user may need to export application data recorded by the PLC to a SCADA (supervisory control and data acquisition) system designed to monitor several connected devices. A PLC provides different communication protocols and ports to facilitate communication between the PLC and the other systems. * **HMI**: Users require a HMI (human machine interface) to interact with a PLC. The operator interfaces can be large touchscreen panels or simple displays that allow users to input and review PLC information in real-time.   **Advantages of PLC**  • Cost effective to control complex systems. • Flexible and can be reapplied to control other systems quickly and easily. • Computer skills allow more sophisticated control. • Troubleshooting accessories make programming easier and reduce downtime. • Reliable components make them work for years before failure. • Less manpower for design • Downsizing and standardization • Improved maintainability Internal Architecture of PLC    ****Applications of PLC**** A programmable logic controller (PLC) is an electronic device used in many industries to monitor and control construction systems and production processes. Unlike PCs and smartphones, which are designed to perform any number of roles, a PLC is designed to perform a single set of tasks, except in the case of limitations in real time and with superior reliability and performance.  To meet the demands of rigorous industrial environments, PLCs are designed to be extremely robust, often capable of withstanding extreme temperatures, humidity, vibration and electrical noise. The logical controllers are commonly responsible for monitoring and controlling a large number of sensors and actuators, and therefore are different from other computer systems in their extensive input / output arrangements. PLC 's are used in several industries like petrochemical ,biomedical,cement manufacturing,oil and gas sector etc |

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| **Date:** | **30-05-2020** | **Name:** | **Ashish Shanbhag** |
| **Course:** | **PYTHON** | **USN:** | **4AL16EC008** |
| **Topic:** | **Build a Webcam Motion Detector** | **Semester & Section:** | **8th A** |
| **Github Repository:** | **Ashish Shanbhag** |  |  |

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| **FORENOON SESSION DETAILS**      **Build a Webcam Motion Detector**  Motion detection is the detection of the change in the position of an object with respect to its surroundings and vice-versa.  import cv2, time  video=cv2.VideoCapture(0)  a=0  while True:  a=a+1  check, frame = video.read()  gray-=v2.cvtColor(frame,cv2.COLOR\_BGR2GRAY)  cv2.imshow(“Capturing",gray)  key=cv2.waitKey(1)  print(gray)  if key==ord('q’):  break  print(a)  video.release()  cv2.destroyAllwindows |