

Academic Year: 2023- 2024 (~~000~~ Semester) **EVEN**

1. Degree, Semester & Branch: VI Semester B. Tech. Information Technology.

Course Code & Title: JIT1601 Internet of Things

Name of the Faculty member: Mr. K. Arunprasad, Associate Professor/IT

Theme of discussion: IoT Architectures: oneM2M.

Date and Time: 10.02.2020 & 4.10 pm to 5.00

2 Innovative practices: JIGSAW Collaborative Learning

“Jigsaw”[1][2] is a collaborative group activity with a twist: students effectively teach each other (with the teacher’s guidance). Students learn through the process of communicating with one another about a given skill or procedure, topic or problem.

2.1 Topic: IoT Architectures: oneM2M

2.2 Outcome

- Describe the services and functionalities of IoT Architectures: oneM2M

2.2 Justification for choosing the topic

This topic describes the core architecture of M2M. Choosing oneM2M as a topic for IoT architectures is justified by its relevance to current technological trends, importance in standardization, interdisciplinary applications, focus on security, connection to real-world applications, and preparation for future careers. By delving into oneM2M, students gain a comprehensive understanding of a critical IoT standard, positioning themselves at the forefront of technological innovation and implementation..Students should be able to enhance their communication, peer learning, individual and teamwork, and self-learning by this activity.

2.3 Procedure and Implementation

2.3.1 Team formation

The heterogeneous groups with six members were formed. Each group formed by bright students, average students, and slow learners, consists of 4 members. One group contain 5 members. Classification of students such as *a bright student, average students, and slow learners* is based on their academic performance. The total class strength is 59 (Boys and Girls). *Twelve heterogeneous groups* were formed based on academic performances such as the CGPA of end semester examination. The table 1 shows the name of the groups.

1.	Debuggers	
2.	Agile Avengers	
3.	Code Stormers	
4.	Hackathon Queens	
5.	Bug Squashers	
6.	Java Jitters	
7.	Reboot Rebels	
8.	Hack Elite	
9.	Ctrl Alt Del	
10.	Byte Karma	
11.	Geek Navi	
12.	Byte Hogs	

Step 1

- Twelve groups with four/five members were formed based on the students' academic performance and ability. It is called home group.
- One student from each group selected as the leader. Each student in a group was given a number from 1 to 4. Each number is representing the following four sub topics. A student was assigned one subtopic in a home group.
 1. Overview of oneM2M Architecture
 2. Key Features of oneM2M
 3. Use Cases and Applications
 4. Benefits and Challenges

Step 2

- Expert groups were formed that consist of student from home groups who were assigned the same number.
- Expert group members were given 15 minutes to discuss an assigned sub topic.

Step 3

- The expert group students brought back into their home groups and allotted 10 minutes for further discussion in which each member become expert in the entire IoT Architectures: oneM2M.

Step 4

- 10 minutes were allotted for the presentation. One student from each home group presented his learned content.
- The others in the group were encouraged to raise queries for clarification

Step 5

- At the end of the session, feedback was collected in five minutes.

2.4 Glimpse



2.5 Reflective Report

2.5.1 Challenges

- Few boys are hesitated to form the expert groups with girls.
- Participation of slow learner for discussion on sub-topic.

2.5.2 Pre-Implementation

The procedure of this activity and team formation was announced in Canvas well in advance.

2.5.3 Observations:

The students were provided the opportunity to become experts in particular sub topic. They shared the knowledge they gained with peers. This learning *promotes both self-learning and peers teaching* among the students to master the course content at a deeper level. Most of the students participated actively. The Jigsaw technique helped the students to develop expertise in a particular topic.

I motivated the students to form heterogeneous groups (boys and girls) based on gender. Also, I encourage the slow learners to refer the course materials during the discussion for active participation. One student from evil boys and Mars *expressed their learned knowledge very well*. The students were encouraged to raise queries for clarification during the presentation.

2.5.4 Students Response:

- Most of the students discussed with teammates comfortably during the discussion in expert groups.
- The bright students were actively involved with peers to discuss the topics in their home group.

- The slow learners wanted to assist during the discussion. They were allowed to refer the material about the topic of the discussion.
- Most of the students enjoyed the discussion in the home and expert group.
- 90% of the students were given excellent feedback regarding the feedback session.

Figure 4 shows the sample collected feedback.

2.5.5 Post Implementation

1. Based on the observation, a lot of *incidental learning* happening in the discussion forum. They observed and learned components of GSM architecture individually that lead to self-learning. They *actively involved* in this expert group discussion rather than it being a one-way communication.
2. All the home groups performed well in the group presentation session. This session *enforced their understanding*.
3. Slow learners from killer boys and Team4 group were not comfortable in their presentation due to lack of attention and participation. However, they understood the concepts of these learning methods.

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Students' response ensures that the students could improve listening, and communication, skills

2.6 Relevance of program outcomes

Programme Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
Outcome	3							2	2	2		2

Figure 4: Sample Feedback

Reference:

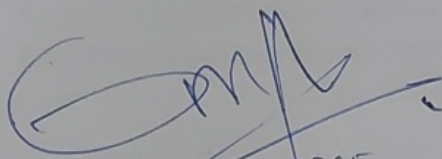
1. https://www.newcastle.edu.au/_data/assets/pdf_file/0016/109600/Jigsaw-learning-activity.pdf
2. <https://www.jigsaw.org/>

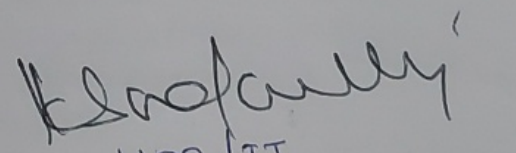
Here are some valuable web references for understanding oneM2M and its role in IoT architectures:

1. **oneM2M Official Website**
 - o URL: [oneM2M](http://oneM2M.org)
 - o **Description:** The official site provides comprehensive information about the oneM2M standard, including technical specifications, white papers, and updates on ongoing projects.
2. **ETSI oneM2M Overview**
 - o URL: [ETSI oneM2M Overview](http://www.etsi.org/oneM2M)

- **Description:** The European Telecommunications Standards Institute (ETSI) offers an overview of oneM2M, its objectives, and its importance in the IoT landscape. It includes links to detailed documentation and resources.
- 3. **oneM2M Technical Specifications**
 - **URL:** [oneM2M Technical Specifications](#)
 - **Description:** This page provides access to the technical specifications and documents published by oneM2M, crucial for understanding the architecture and protocols defined by the standard.
- 4. **oneM2M GitHub Repository**
 - **URL:** [oneM2M GitHub](#)
 - **Description:** The official GitHub repository for oneM2M contains source code, sample applications, and tools that can help developers implement and experiment with oneM2M standards.
- 5. **ITU on IoT and oneM2M**
 - **URL:** [ITU on IoT and oneM2M](#)
 - **Description:** The International Telecommunication Union (ITU) provides insights into how oneM2M fits within the broader context of IoT and M2M communications, including its role in global telecommunications.
- 6. **oneM2M White Papers**
 - **URL:** [oneM2M White Papers](#)
 - **Description:** This section includes white papers discussing various aspects of oneM2M, including its architecture, use cases, and implementations, providing in-depth knowledge and case studies.
- 7. **oneM2M Developer Resources**
 - **URL:** [oneM2M Developer Resources](#)
 - **Description:** A resource page specifically for developers, offering tools, tutorials, and guides to help with the development of oneM2M-compliant applications and services.
- 8. **IEEE Xplore on oneM2M**
 - **URL:** [IEEE Xplore on oneM2M](#)
 - **Description:** IEEE Xplore provides access to research papers and articles related to oneM2M, offering scholarly insights and detailed technical analyses.
- 9. **OASIS IoT and oneM2M**
 - **URL:** [OASIS IoT and oneM2M](#)
 - **Description:** OASIS (Organization for the Advancement of Structured Information Standards) discusses IoT and how standards like oneM2M are shaping the future of connected devices and services.
- 10. **GlobalPlatform on oneM2M Security**
 - **URL:** [GlobalPlatform on oneM2M Security](#)
 - **Description:** Provides information on the security aspects of oneM2M, including guidelines and best practices for ensuring secure IoT deployments.

These references provide a robust foundation for understanding oneM2M, its architecture, and its application in the IoT ecosystem. They offer a mix of official documentation, developer resources, scholarly articles, and industry insights, catering to both technical and non-technical audiences.


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