Department of Electrical and Electronics Engineering
Academic Year 2024 – 2025 (Even Semester)

Degree, Semester & Branch: VI Semester B.E. EEE
Course Code & Title: EE3017 Embedded C Programming
Name of the Faculty member: Mrs. S. Sharmila Kumari, AP/EEE

Innovative Practice Description

- **Unit / Topic:** Unit I / Data Types and Operators.
- **Course Outcome:** CO 1
- **Unit Outcome:** 1c
- **Activity Chosen: Mini-map**
- **Justification:**
  - Differentiate Data Types and Operators
  - After teaching the concept, I thought of conducting this activity for making the students to give the difference between the two concepts which enhance the learning level and as a teacher I can judge the understanding level of the students.

Time Allotted for the Activity: 5 Minutes

After teaching the concept, the students were made to pair with their neighbors

Reporter: Myself

At the end the Class (Last 6 minutes)

- ✓ I asked the students to think about Data Types and Operators concept for 2 minute.
- ✓ Then I told them to Pair with their neighbors and discuss about the concepts for another 1 minute.
- ✓ Finally I told them to design mini-map and submit within 3 minutes.

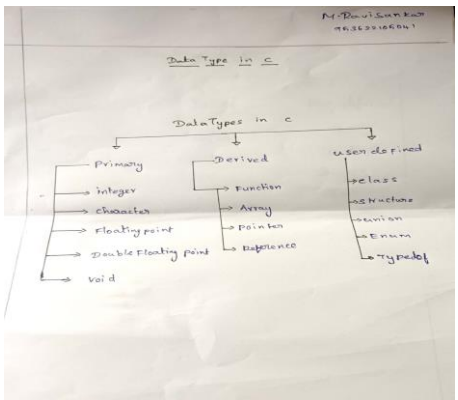
- **CO – PO / PSO mapping:**

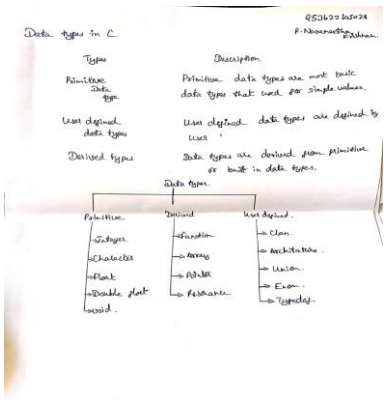
CO	PO1	PO2	PO3	PO10	PO12	PSO2	PSO3
C312.1	3	1	1	1	1	1	1

- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO10	PO12	PSO2	PSO3
	3	1	1	1	1	1	1
Justification for correlation	Students will apply electronic engineering concepts to solve engineering problems. Hence it is substantially correlated (level 3).	Students will identify the mathematical, engineering and other relevant knowledge that applies to the Program Control & C Functions (level 1).	Students will determine the design objectives and functional block of structured C. Hence it is slightly correlated (level 1).	Students will be able to communicate the technical concept through Active Learning Methods; hence it is slightly correlated (level 1).	Students will use the electronic fundamentals in the advancement of embedded C Program. Hence it is slightly correlated (level 1).	Students will be able to design and test the electronic system in the engineering applications. Hence it is slightly correlated (level 1).	Students will be able to design and develop the software skills required for industrial automation systems. Hence it is slightly correlated (level 1).

- **Images / Screenshot of the practice:**





❖ *Reflective Critique:*

1. **Pre-implementation Reflection :**

- **Benefits:**
  - ❖ I preferred this Activity because they have Data Types and Operators separately.
- **Challenges:**
  - ❖ In the class mostly boys hastate to answer to the questions.
  - ❖ Time utilization for conducting activity.

Steps taken:

- ❖ The boys are sitting in 2 columns – I planned to choose more pairs from boys to involve them in the activity.

2. **Post-implementation Reflection :**

- **Benefits:**
  - ➢ Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.
- **Challenges:**
  - ➢ Slow learners were not able to understand some topics during discussion hours.

❖ *Benefit of the practice**:*** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

✓ The assessment of effectiveness of the activity was felt when told most of the points.

✓ While conducting the activity, I understood that the students will be able to explain the concepts of Data Types and Operators.

✓ The success of the activity was evaluated by asking the same question in **Internal Assessment test I – Around 50% of students answered**.

References:

1. https://omerad.msu.edu/teaching/teaching-strategies/active-learning-strategies/27-teaching/184-visual-modeling-mini-maps

Signature of Faculty Member **HOD**

Department of Electrical and Electronics Engineering
Academic Year 2024 – 2025 (Even Semester)

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Course Code & Title: EE3017 Embedded C Programming
Name of the Faculty member: Mrs. S. Sharmila Kumari, AP/EEE

Innovative Practice Description

- **Unit / Topic:** Unit II / Header files
- **Course Outcome:** CO 2
- **Unit Outcome:** 2b
- **Activity Chosen: Visual Clickers**
- **Justification:**
  - Differentiate Header files for Projects
  - The topic Header files are used for the project purpose. After teaching the concept, I thought of conducting this activity for making the students to think about how to select header files for the given project specification which enhance the learning level and as a teacher I can judge the understanding level of the students.

Time Allotted for the Activity: 6 Minutes

After teaching the concept of Header Files, the students were made to pair with their neighbours

Total Strength is 63, Number of Pairs – minimum 6 in one team
Photographer: one student - Myself
Reporter: Myself
At the end the Class (Last 6 minutes)

- I asked the students to think about Header Files concept for 1 minute.
- Then I told them to Pair with their neighbours and discuss for another 1 minute.
- With the help of PPT prepared (Multiple choice questions) students use their clickers to respond to the question and then the answers were be projected to the students.

- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO9	PO10	PO12	PSO2	PSO3
C312.2	3	2	2	1	1	1	1	1

- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO9	PO10	PO12	PSO2	PSO3
	3	2	2	1	1	1	1	1
Justification for correlation	Students will apply electronic engineering concepts to solve engineering problems. Hence it is substantially correlated (level 3).	Students will compare various header files and contrast alternative solutions for projects to select the best embedded C structure. Hence, it is moderately correlated (level 2).	Students will apply different hardware delays to develop multiple engineering design solutions. Hence, it is moderately correlated (level 2).	Students will be able to work with their team through Active Learning Methods. Hence it is slightly correlated (level 1).	Students will be able to communicate the technical concept through Active Learning Methods; hence it is slightly correlated (level 1).	Students will use the electronic fundamentals in the advancement of embedded system technology; hence it is slightly correlated (level 1).	Students will be able to design and test the electronic system in the engineering applications. Hence it is slightly correlated (level 1).	Students will be able to design and develop the with microprocessor skills required for industrial automation systems. Hence it is slightly correlated (level 1).

- **Images / Screenshot of the practice:**

❖ *Reflective Critique:*

1. **Pre-implementation Reflection :**

I preferred this Activity because they have Header Files for projects separately.

Challenges anticipated:

Time utilization for conducting activity.

2. **Post implementation Reflection:**

- **Benefits:**
  - Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.
- **Challenges:**
  - Student clicker's were not clear in photos. So clicker tools prepared from students were not advisable.

❖ *Benefit of the practice:* (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

✓ The assessment of effectiveness of the activity was felt when told most of the points.

✓ While conducting the activity, I understood that the students will be able to explain the concepts of Header Files.

✓ The success of the activity was evaluated by asking the same question in Internal Assessment test I – **All the students answered.**

References:

1. https://omerad.msu.edu/teaching/teaching-strategies/active-learning-strategies/27-teaching/184-visual-modeling-visualclicker

Signature of Faculty Member **HOD**

Department of Electrical and Electronics Engineering
Academic Year 2024 – 2025 (Even Semester)

Degree, Semester & Branch: VI Semester B.E. EEE
Course Code & Title: EE3017 Embedded C Programming
Name of the Faculty member: Mrs. S. Sharmila Kumari, AP/EEE

Innovative Practice Description

- **Unit / Topic:** Unit III / Logic operations in 8051
- **Course Outcome:** CO 3
- **Unit Outcome:** 3c
- **Activity Chosen: Think-Pair-Share**
- **Justification:**
  - Differentiate Logic Operations in 8051- AND (&), OR (|), EX-OR (^{A}), Inverter (~), Shift Right (»), and Shift Left («)
  - After teaching the concept, I thought of conducting this activity for making the students to give the difference between the different Logic Operations in 8051 concepts which enhance the learning level and as a teacher I can judge the understanding level of the students.

Time Allotted for the Activity: 6 Minutes

After teaching the concept, the students were made to pair with their neighbours.

Total Strength is 64, Number of Pairs – 10

Photographer: Myself

Reporter: Myself

At the end the Class (Last 6 minutes)

- ✓ I asked the students to think about Logic Operations in 8051 concept for 2 minute.
- ✓ Then I told them to Pair with their neighbours and discuss about the difference between the operators for another 1 minute.
- ✓ Finally, I selected on Pair from each column randomly and ask them to share one difference between the concepts. (3 miuntes)
- ✓ When each pair told the points simultaneously, I wrote the points on the board.
- ✓ Finally, I summarized the points and I told one missed point to all the students.

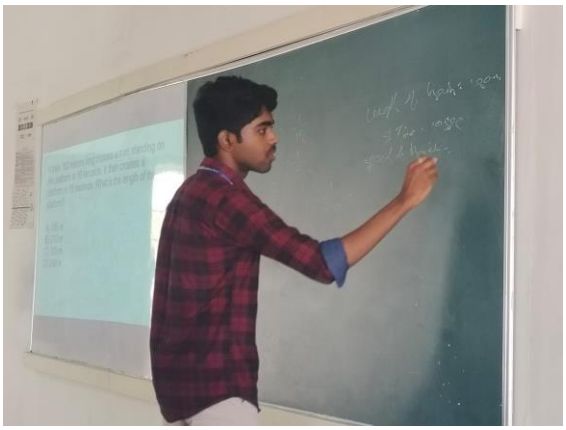
- **CO – PO / PSO mapping:**

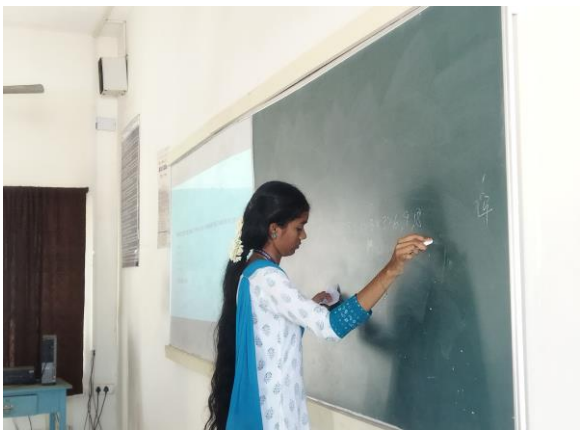
CO	PO1	PO2	PO3	PO9	PO10	PO12	PSO2	PSO3
C312.3	3	2	2	1	1	1	2	1

- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO9	PO10	PO12	PSO2	PSO3
	3	2	2	1	1	1	2	1
Justification for correlation	Students will apply electronic engineering concepts to solve engineering problems. Hence it is substantially correlated (level 3).	Students will compare various 8051 logical operation and contrast alternative solutions for 8051 programming environments. Hence, it is moderately correlated (level 2).	Students will apply various 8051 interrupt programming concepts to develop 8051 programming environments. Hence, it is moderately correlated (level 2).	Students will be able to work with their team through Active Learning Methods. Hence it is slightly correlated (level 1).	Students will be able to communicate the technical concept through Active Learning Methods; hence it is slightly correlated (level 1).	Students will use the electronic fundamentals in the advancement of embedded system technology; hence it is slightly correlated (level 1).	Students will be able to design and test the electronic system in the engineering applications. Hence it is moderately correlated (level 2).	Students will be able to design and develop the hardware and software with microprocessor skills required for industrial automation systems. Hence it is slightly correlated (level 1).

- **Images / Screenshot of the practice:**





❖ *Reflective Critique:*

1. Pre-implementation Reflection :

- I preferred this Activity because they have Logic Operations in 8051- AND (&), OR (|), EX-OR (^{A}), Inverter (~), Shift Right (»), and Shift Left («) separately.

Challenges anticipated:

❖ In the class mostly boys hastate to answer to the questions.

❖ Time utilization for conducting activity.

2. Post implementation Reflection:

Benefits:

➢ Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

Challenges:

➢ Slow learners were not able to understand some topics during discussion hours.

*Benefit of the practice**:*** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

✓ The assessment of effectiveness of the activity was felt when told most of the points.

✓ While conducting the activity, I understood that one point was missed with respect to method of computation and finally I insisted the point they missed to tell.

✓ The success of the activity was evaluated by asking the same question in Internal

✓ Assessment test II – Around 30% of students answered correctly.

References:

1. http://www.readwritethink.org/professional-development/strategy-guides/using-think- pair-share-30626.html
2. https://in.video.search.yahoo.com – Think pair share

Signature of Faculty Member **HOD**

Department of Electrical and Electronics Engineering
Academic Year 2024 – 2025 (Even Semester)

Degree, Semester & Branch: VI Semester B.E. EEE
Course Code & Title: EE3017 Embedded C Programming
Name of the Faculty member: Mrs. S. Sharmila Kumari, AP/EEE

Innovative Practice Description

- **Unit / Topic:** Unit IV / 8051 interrupts
- **Course Outcome:** CO 4
- **Unit Outcome:** 4d
- **Activity Chosen: One Minute Paper**
- **Justification:**
  - Explain various types of interrupts
  - The topic interrupts in 8051 has 6 types of interrupts. Since each type has its own definition, limitation and types. After teaching the concept, I thought of conducting this activity for making the students to give the difference between each type of interrupts which enhance the learning level and as a teacher I can judge the understanding level of the students.
- **Time Allotted for the Activity:** 3 Minutes

After teaching the concept, give students one or two minutes to think about the topic without writing anything.

Total Strength is 64

Reporter: Myself

At the end the Class (Last 3 minutes)

✓ I asked the students to think about 8051 interrupts for 2 minutes.
✓ Then I told them to write as much as they can within a short period of time (1 minute)
✓ Finally, I collected the papers from each column (1 minute)

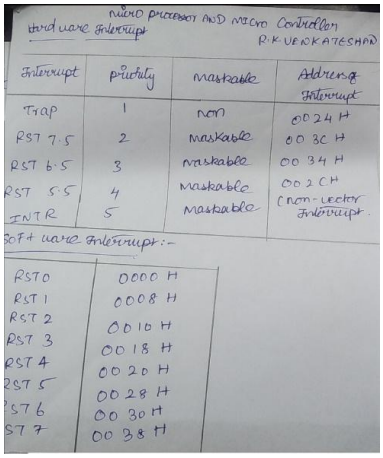
- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO10	PO12	PSO2	PSO3
C312.4	3	2	2	1	1	2	1

- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO10	PO12	PSO2	PSO3
	3	2	2	1	1	2	1
Justification for correlation	Students will apply electronic engineering concepts to solve engineering problems. Hence it is substantially correlated (level 3).	Students will compare various 8051 serial ports and interrupt programming. Hence, it is moderately correlated (level 2).	Students will analyses the various 8051 data serialization and ROM space access concepts. Hence, it is moderately correlated (level 2).	Students will be able to communicate the technical concept through Active Learning Methods. Hence it is slightly correlated (level 1).	Students will use the electronic fundamentals in the advancement of embedded system technology. Hence it is slightly correlated (level 1).	Students will be able to design and test the electronic system in the engineering applications. Hence it is moderately correlated (level 2).	Students will be able to design and develop the hardware and software with microprocessor skills required for industrial automation systems. Hence it is slightly correlated (level 1).

- **Images / Screenshot of the practice:**



❖ *Reflective Critique:*

1. Pre-implementation Reflection :

I preferred this Activity because they have 6 types of interrupts in 8051 separately.

Challenges anticipated:

❖ In the class mostly boys hastate to answer to the questions.

❖ Time utilization for conducting activity.

2. Post implementation Reflection:

Benefits:

- Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

Challenges:

- Slow learners were not able to understand some topics during discussion hours.

Benefit of the practice: (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

✓ The assessment of effectiveness of the activity was felt when told most of the points.

✓ While conducting the activity, I understood that the students will be able to explain the concepts of interrupt in 8051.

References:

1. https://omerad.msu.edu/27-teaching/177-minute-papers
2. Shibu. K.V, "Introduction to Embedded Systems", 2e, Mc graw Hill, 2017.

Signature of Faculty Member **HOD**

Department of Electrical and Electronics Engineering
Academic Year 2024 – 2025 (Even Semester)

Degree, Semester & Branch: VI Semester B.E. EEE
Course Code & Title: EE3017 Embedded Systems
Name of the Faculty member: Mrs. S. Sharmila Kumari, AP/EEE

Innovative Practice Description

- **Unit / Topic:** Unit V / LCD interfacing
- **Course Outcome:** CO 5
- **Unit Outcome:** 5d
- **Activity Chosen: Flipped Class Room**
- **Justification:**
  - Flipped classroom is a "pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter"
- **Time Allotted for the Activity:** 30 Minutes

Total Strength is 64

Reporter: Myself

At the Class (30 minutes)

- ✓ I shared the material related to the topic through canvas LMS.
- ✓ Then I told them to prepare the topic as a team with a help of PPT.

- **CO – PO / PSO mapping:**

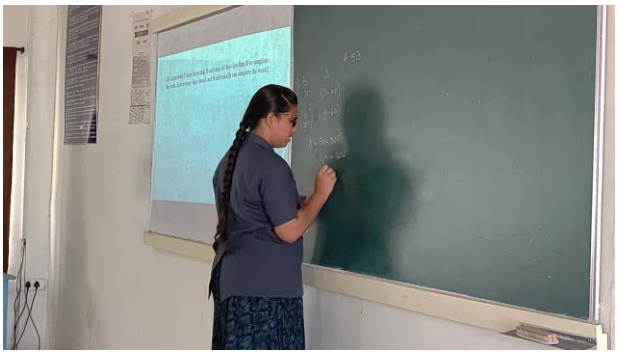
CO	PO1	PO2	PO3	PO5	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C312.5	3	3	2	1	1	1	1	1	1	1	2	3

- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO5	PO8	PO9	PO10
	3	3	2	1	1	1	1
Justification for correlation	Students will have fundamental electronic engineering concepts to solve the electronic problems.	Students will identify the embedded C language format of 8051.	Students will determine the design objectives and functional requirements of the keyboard, display and special motors and automation application of 8051 microcontrollers.	Students will be able to apply appropriate techniques, resources, and modern engineering and software tools.	Students follow basic ethical practice to prepare the report	Reports will be submitted by the team of students on designing/simulating the application.	Projects given will ensure the effective communication of engineering activities with the society.

Innovative practice	PO11	PO12	PSO1	PSO2	PSO3
	1	1	1	2	3
Justification for correlation	Projects given will ensure the effective financial management of engineering activities with the society.	Students will use the electronic fundamentals in the advancement of embedded system technology.	Analyze the performance of digital logic circuits using VHDL software packages.	Students will be able to design and test the electronic system in the engineering applications.	Students will be able to design and develop the hardware and software with digital skills required for industrial automation systems.

- **Images / Screenshot of the practice:**

Benefits:

- This practice improves the peer coaching / studying with in the class. Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

References:

1. https://www.panopto.com/blog/7-unique-flipped-classroom-models-right/
2. Shibu. K.V, "Introduction to Embedded Systems", 2e, Mc graw Hill, 2017.

Signature of Faculty Member **HOD**