RAMCO INSTITUTE OF TECHNOLOGY

Department of Electronics and Communication Engineering

Academic Year: 2019-2020 (Odd Semester)

Innovative Teaching Method

UNIT I - HIGH PERFORMANCE CISC ARCHITECTURE PENTIUM

Degree, Semester& Branch: VII Semester B.E. ECE B

Course Code & Title: EC6013 Advanced Microprocessors and Microcontrollers

Name of the Faculty member: Mr.A.Azhagu Jaisudhan Pazhani

Name of the Topic: Pentium Architecture, Addressing Modes and Pentium Programming

Name of the Innovative Practice: Zero Minute Speech, Animation video and MASM Simulation Tool

Date & Duration: 09.07.2019 (10 Minutes), 20.07.2019 (15 Minutes) & 22.07.2019 (15 Minutes)

Description:

(i) Zero Minute Speech:

- Zero Minute Speech will leads to express basics of the particular topics by different students.
- The important topics were allotted to set of students and they will give speech on the topic with doubt clarification.

(ii) Animation video

- Use of audio-visual aids help in maintaining discipline in the class since all the students' attention are focused in learning. This interactive session also develops critical thinking and reasoning that are important components of the teaching-learning process.
- Students learn when they are motivated and curious about something. Traditional verbal instructions can be boring and painful for students. However, use of audio-visual provides intrinsic motivation to students by peaking their curiosity and stimulating their interests in the subjects.

(iii) Simulation Tool:

- Simulation software is based on the process of modelling a real phenomenon with a set of mathematical formulas. It is, essentially, a program that allows the user to observe an operation through simulation without actually performing that operation.
- A primary advantage of simulators is that they are able to provide users with practical feedback when designing real world systems. This allows the designer to determine the correctness and efficiency of a design before the system is actually constructed.

Goals (Learning Outcomes):

- The students will be able to analyse basic concepts of Pentium processor
- The students can be acquired better knowledge about addressing modes of Pentium Processor.
- The students can be program the Pentium processor using MASM Tool.

Use of appropriate method:

Justification for choosing the following Activities:

- **Zero Minute Speech:** Leads to express basics of the particular topics by different students.

- **Audio & Video Tools:** According to the Webster dictionary, audio-visual aids are defined as "training or educational materials directed at both the senses of hearing and the sense. Audio-visual provides opportunities for effective communication between teacher and students in learning.
- **Simulation Tool:** It allows the students to create their own solution for the problem and they will get the real time result.

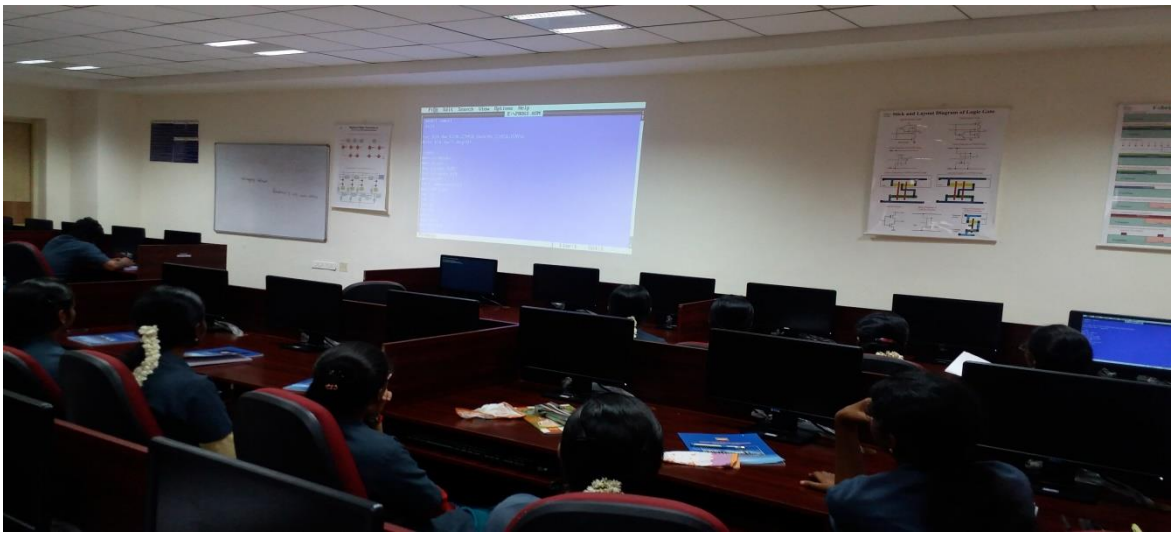
Effective Presentation: (Implementation (Plan & Execution) with Proof):

- **Zero Minute Speech:** I choose this tool because it does not need a big preparation so I can involve the slow-learners also.
- **Animation:** Sometimes audio video tool were lengthy session, so I choose the video clips which more essential to the students.
- **Simulation Tool:** The students completed their activity within the planned time because the procedures are simple.

UNIT I
Zero Minute Speech for Pentium Architecture on 09.07.2019

Animation video for Addressing Modes operation on 20.07.2019


Pentium Programming Using MASM Simulation Tool on 22.07.2019



Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- **Zero Minute Speech:** Students delivered the topics with examples about the various blocks of Pentium architecture.
- **Animation:** This technique helps to give lively working of how the processor gets data for the instructions from memory using different addressing techniques.
- **Simulation Tool:** This activity gives the real time solution for their coding.

Changes required for future (if required):

- Need to plan extra hour for simulation tool activity.
- Need to give chance to all students for zero minute's speech.

Reflective Critique:

Challenges:

- **Zero Minute Speech:** Not able to give chance to all students during zero minute speech practice.
- **Animation:** Sometimes there is no audio in animation so faculty member need to explain the step by step working.
- **Simulation Tool:** Few students were not able to follow the procedures in the software.

Benefits:

- **Zero Minute Speech:** Few students share their ideas and information with classmates and some students interacted with other students to clarify the doubts.
- **Animation:**
  - The animation is attractive, It is useful when quickly getting and holding the audience's attention
  - The animation can show the imagined objects in the motion, It is ideal for demonstrating processes
  - Interactive learning with live-action animation keeps learners interested and reinforces skills
- **Simulation Tool:** One of the primary advantages of simulators is that they are able to provide users with practical feedback when designing real world systems.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	1			1	1	1	1	1

CO1: The students will be able to describe the operation of Pentium processor and programming concepts.

References:

- *https://www.presentationblogger.com/3-simple-steps-how-to-do-a-speech-on-any-topic-with-zero-preparation/*
- *James L. Antonakos, " The Pentium Microprocessor," Pearson Education, 1997.*
- *https://www.youtube.com/watch?v=LUvN70k5Cpo*
- *http://www.visualmasm.com/*

RAMCO INSTITUTE OF TECHNOLOGY

Department of Electronics and Communication Engineering

Academic Year: 2019- 2020 (Odd Semester)

Innovative Teaching Method

UNIT II - HIGH PERFORMANCE RISC ARCHITECTURE ARM

Degree, Semester& Branch: VII SEMESTER B.E. ECE B
Course Code & Title: EC6013 Advanced Microprocessors and Microcontrollers
Name of the Faculty member: Mr. A.Azhagu Jaisudhan Pazhani
Name of the topic: ARM Architectural Inheritance
Name of the Innovative Practice: One Minute Paper
Date & Duration: 25.07.2019 & 10 Minutes

Description:

This method used at the end of class for assessing student performance. Advantage of this technique is that it provides quick feedback on whether the concept is reached to the students. Additionally, by asking students to add a question at the end, this assessment becomes an integrative task. Sometimes, instead of asking for the main point, a professor may wish to probe for the most disturbing or most surprising item.

Goals (Learning Outcomes):

- The students will be able to understand the concepts of ARM Processors

Use of appropriate methods:

Justification for choosing the following Activities:

ARM Architectural Inheritance is the important concept in ARM Processor that helps the student to understand the working principles ARM processor. Student can easily recall the topics covered in class at the end of class by implementing this one minute paper activity.

Effective Presentation: (Implementation (Plan & Execution) with Proof):

One minute papers is used at the end of a class to have students reflect back and think more deeply about the most important concept discussed in class that day. I asked the students must first organize their thinking to rank the major points and then decide upon a significant question. Students write a one-minute paper in response to my question. After one minute duration, I collected the papers from students.

ARM Architectural Inheritance


Significance of Results: (Assessment of Effectiveness/Success of the Activity):

Minute Paper: Helps the students to recall the examples for ARM Functional blocks.

Changes required for future (if required): Nil

Reflective Critique:

Benefits:
Minute Paper:

- Provide a "conceptual bridge" between successive class periods.
- Improve the quality of class discussion by having students write briefly about a concept or issue before they begin discussing it.
- Increase overall listening capability of the students.

Challenges:

Students wrote correct answers in different way for the same questions that information shared with all the students at the end of class. Initially, I have planned this activity for only one minute but students were taken three minute, but it helps the students to remember all the concepts. It ensures equal participation of each and every class member, including anyone who may be too shy or fearful to participate orally.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO2	3	2	1	1	1	-	-	-	-	1	1	1

CO2: The students will be able to analyze the operation of ARM processor, instruction sets and development tools.

References:

References:

- *https://www.youtube.com/\watch?v=7LqPJGnBPMM*
- *https://www.humber.ca*
- *IAR integrated development tool*
- *https://oncourseworkshop.com/self-awareness/one-minute-paper/*
- *Steve Furber, "ARM System –On –Chip architecture," Addision Wesley, 2000.*
- *James L.Antonakos, "An Introduction to the Intel family of Microprocessors," Pearson Education,*
  1999.

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Innovative Teaching Method

UNIT III – ARM APPLICATION DEVELOPMENT

Degree, Semester& Branch: VII SEMESTER B.E. ECE B

Course Code & Title: EC6013 Advanced Microprocessors and Microcontrollers

Name of the Faculty member: Mr. A.Azhagu Jaisudhan Pazhani

Name of the topic: Exception and Interrupts

Name of the Activity: Buzz Session

Date: 19.08.2019

Description:

(i) Buzz Session:

- Buzz sessions are short participative sessions that are deliberately built into a lecture or larger group exercise in order to stimulate discussion and provide student feedback.
- In such sessions, small sub-groups of two to four persons spend a short period (generally no more than five minutes) intensively discussing a topic or topics suggested by the teacher.
- Each sub-group then reports back on its deliberations to the group as a whole, or sometimes combines with another sub-group in order to share their findings and discuss the implications.

Goals (Learning Outcomes):

- The students will be able to describe the different interrupt handling schemes.
- The students will be able to analyze function and working of cache memory & Memory Protection Units.

Use of appropriate method:

Justification for choosing the following Activities:

- **Buzz Session:** Buzz sessions are short participative sessions that are deliberately built into a lecture or larger group exercise in order to stimulate discussion and provide student feedback.

Effective Presentation: (Implementation (Plan & Execution) with Proof):

- **Buzz Session:** Group created with 4 members with unique topic, asked individual participants to write their own views and discuss with group members at last ask each group to share their points.

Exception and Interrupts

Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- **Buzz Session:** Students delivered the different views on their topics and shared with each groups.

Changes required for future (if required):

- Need to allocate more time to give opportunities to all the students in future.

Reflective Critique:

Challenges:

- **Buzz Session:** Lack of participation by all group members. Some of the students are not attentive towards the accomplishments.

Benefits:

Buzz Session:

- Encourage students to become actively involved in a topic.
- Allow feedback to take place.
- Short, intense and using trainees own information so there is ownership of the output by trainees.

Strengths:

- Can be used to achieve a wide range of objectives, both cognitive and non-cognitive.
- Encourage students to become actively involved in a topic.
- Allow feedback to take place.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO3	3	2	1	1	1	-	-	1	1	1	1	1

CO3: The students will be able to develop DSP applications using ARM processor.

References:

- *http://www.kstoolkit.org/buzz-groups*
- *www.teachwire.net*
- *https://elearningindustry.com/create-storyboards-for-effective-elearning-8-tips*
- *https://oncourseworkshop.com/self-awareness/one-minute-paper/*
- *James L.Antonakos, "An Introduction to the Intel family of Microprocessors," Pearson Education, 1999.*

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Department of Electronics and Communication Engineering

Academic Year: 2019- 2020 (Odd Semester)

Innovative Teaching Method

UNIT IV – MOTOROLA 68HC11 MICROCONTROLLERS

Degree, Semester& Branch: VII SEMESTER B.E. ECE B

Course Code & Title: EC6013 Advanced Microprocessors and Microcontrollers

Name of the Faculty member: Mr. A.Azhagu Jaisudhan Pazhani

Name of the topic: Operating Modes & PWM

Name of the Activity: Zero Minute Speech & Animation

Date: 04.09.2019 & 12.09.2019

Description:

i) Zero Minute Speech:

Zero Minute Speech will leads to express basics of the particular topics by different students. The important topics were allotted to set of students and they will give speech on the topic with doubt clarification.

(ii) Animation:

The interactive animation takes less time to learn the students complex things and it makes them enjoy more to learn difficult things, The education and training are higher when the information presented via the computer animation systems than the traditional classroom lectures. Animations help learners understand and remember information and animation is a brilliant and innovative new way to encourage students to learn. Animation teaches using the visual aids, It is a very strong proven way of learning, It brings a topic to life, It gains the attention of the viewer.

Goals (Learning Outcomes):

- ✪ The students will be able to analyse basic mode of 68HC11 processor operation.
- ✪ The students will be able to describe the step by step process of PWM.

Use of appropriate method:

Justification for choosing the Mind Map Activity:

1. **Zero Minute Speech:** Leads to express basics of the particular topics by different students.
2. **Animation:** It creates more interest over the topic because PWM is a primary device to control loads with different voltage level, this animation video gives step by step process of PWM

Effective Presentation: (Implementation (Plan & Execution) with Proof):

- ✪ **Zero Minute Speech:** Students already know about the particular topic so I can recall the existing concepts through zero minute speech activity.
- ✪ **Animation:** It helps the students to understand the working principle of the particular concepts.

Operating Modes	PWM
	

Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- ✪ **Zero Minute Speech:** Each student will delivered their thoughts briefly related to the topic and clears doubts along with the friends.
- ✪ **Animation:** This technique helps to give lively working of PWM to students and they understand the step by step process of PWM.

Changes required for future (if required):

- ✪ In future need to plan animation activity for entire period.
- ✪ Need to give chance to all students

Reflective Critique:

Challenges:

1. **Zero Minute Speech:** Not able to give chance to all students during zero minute speech practice.
2. **Animation:** Sometimes there is no audio in animation so faculty member need to explain the step by step working

Benefits:

1. **Zero Minute Speech:** Few students share their ideas and information with classmates and some students interacted with other students to clarify the doubts.
2. **Animation:**
   - ➢ The animation is attractive, It is useful when quickly getting and holding the audience's attention
   - ➢ The animation can show the imagined objects in the motion, It is ideal for demonstrating processes
   - ➢ Interactive learning with live-action animation keeps learners interested and reinforces skills

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO4	3	2	1	1	1	-	-	-	-	1	1	1

CO4: The students will be able to explain about MOTOROLA 68HC11 architecture and instruction sets.

References:

- *https://www.youtube.com/watch?v=B_Ysdv1xRbA*
- *Gene.H.Miller, "Micro Computer Engineering," Pearson Education, 2003.*
- *https://www.presentationblogger.com/3-simple-steps-how-to-do-a-speech-on-any-topic-with-zero-preparation/*
- *http://www.icaltefl.com/just-a-minute-speaking-activity*

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Academic Year: 2019-2020 (Odd Semester)

Innovative Teaching Method

UNIT V – PIC MICROCONTROLLER

Degree, Semester& Branch: VII Semester B.E. ECE B

Course Code & Title: EC6013 Advanced Microprocessors and Microcontrollers

Name of the Faculty member: Mr.A.Azhagu Jaisudhan Pazhani

Name of the Topic: Timers

Name of the Innovative Practice: Audio & Video Tools

Date & Duration: 24.09.2019 (30 Minutes)

Description:

(i) Audio & Video Tools:

Use of audio-visual aids help in maintaining discipline in the class since all the students' attention are focused in learning. This interactive session also develops critical thinking and reasoning that are important components of the teaching-learning process. Students learn when they are motivated and curious about something. Traditional verbal instructions can be boring and painful for students. However, use of audio-visual provides intrinsic motivation to students by peaking their curiosity and stimulating their interests in the subjects.

Goals (Learning Outcomes):

1. The students will be able to elaborate operation of timers.

Justification for choosing the following Activities:

1. **Audio & Video Tools:** According to the Webster dictionary, audio-visual aids are defined as "training or educational materials directed at both the senses of hearing and the sense. Audio-visual provides opportunities for effective communication between teacher and students in learning.

Effective Presentation: (Implementation (Plan & Execution) with Proof):

- **Audio & Video Tools:** Sometimes audio video tool were lengthy session, so I choose the video clips which more essential to the students.

Timers Audio & Video Tools on 24.09.2019

Significance of Results: (Assessment of Effectiveness/Success of the Activity):

- **Audio & Video Tools:** With audio & video presentation the students got different types of procedures and techniques.

Changes required for future (if required): Need to select better quality videos in futures.

Reflective Critique:

Challenges:

- **Audio & Video Tools:** Sometimes audio video tool were lengthy session and poor quality of the audio signal make noises inside the class.

Benefits:

- **Audio & Video Tools:** Audio video tool gives different teaching experience to the students with some animation.

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO5	3	2	1	1	1	-	-	1	1	1	1	1

CO5: The students will be able to elaborate the operation of PIC microcontroller and instruction sets.

References:

- *https://www.sdera.wa.edu.au*
- *https://technologyadvice.com/blog/marketing/brainstorming-activities-inspire-content-marketing-team/*
- *John.B.Peatman, "Design with PIC Microcontroller," Prentice Hall, 1997.*
- *https://www.wrike.com/blog/techniques-effective-brainstorming/*
- *https://www.readingrockets.org/strategies/exit_slips*
- *http://www.readwritethink.org/professional-development/strategy-guides/exit-slips-30760.html*