



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai | Accredited by NAAC)

Dindigul – Palani Highway, Dindigul – 624 002

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC

On

Embedded Programming



A handwritten signature in green ink, appearing to read 'D. Senthil Kumaran'.

Dr.D.SENTHIL KUMARAN, M.B., Ph.D., (MUS).

Principal

**SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.**



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai | Accredited by NAAC)

Dindigul – Palani Highway, Dindigul – 624 002

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CIRCULAR

20.01.2020

Department of ECE has planned to conduct Value Added Course for IV year students in the title “**Embedded Programming**” from 25.01.2020 onwards. The main objective of this course involves imparting skills and knowledge related to basics of microprocessor, microcontroller and ARM. All the students are asked to attend the course without fail and get benefitted

S. Karthigai
20/1/20
HoD/ECE

Dr.S.Karthigai Lakshmi, Prof/ECE



Dr.D. Senthil Kumar

Dr.D.SENTHIL KUMARAN, M.B., Ph.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

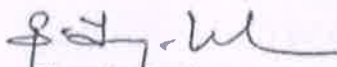
Dindigul - Palani Highway, Dindigul - 624 002.
Email: ssmictdgl@gmail.com Website: www.ssmiet.ac.in

Department of Electronics and Communication Engineering

VAC on "Embedded Programming"

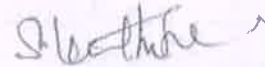
Students Name list (IV-A)

| S.No | Register number | Name of the Student |
|------|-----------------|---------------------|
| 1 | 922116106002 | ABINAYA D |
| 2 | 922116106003 | AJITHA G |
| 3 | 922116106009 | BALAJI K.G |
| 4 | 922116106016 | DEEPA T |
| 5 | 922116106017 | DEEPIKA R |
| 6 | 922116106020 | DHAMODHARAN A |
| 7 | 922116106021 | DHARANI S |
| 8 | 922116106023 | GEETHA J |
| 9 | 922116106026 | HEMALATHA K |
| 10 | 922116106027 | ISHWARYA V |


Faculty Incharges

1.S.Jayakumar, AP/ECE

2.T.Leela Priyadharsini, AP/ECE


HOD/ECE

Dr.S. KARTHIGAI LAKSHMI
Professor & Head
Department of ECE
SSM Institute of Engg & Tech
Dindigul - 624 002



Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (MUS).,
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



- disk D/E) → open the folder → Save a file with folder name.
4. From database → Go to NXP → Select LPC 2148 → Ok → Add file → Ok.
 5. Go to target option → Right click source group1 → select add files to group' Source group1
→ Give your folderName.c → Add → Close.
 6. Type the program → File → Save as → Filename.c → Save.
 7. Build the program → Rebuild.
 8. Go to target options → click output → Enable create HEX file → Ok.
 9. Switch ON he kit → Press reset button to load the new program.
 10. Desktop → open flash magic.
 11. **Step(i)** Select LPC 2148 → select Comport → Set baudrate as 9600 → interface None
→ Set oscillator frequency as 12 MHz.
 - Step (ii)** Enable erase all flash-code.
 - Step (iii)** Go to browse and select HEX file.
 - Step (iv)** Select verify after programming.
 - Step (v)** Click start → Now the program is downloaded to kit.
 12. Release reset button → View the output.



Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (MUS).

Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai Accredited by NAAC)
Dindigul – Palani Highway, Dindigul – 624 002

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Value Added Course Summary 2019-2020

Course Name: Embedded Programming

Course Duration: 30 hours

Year Offered: 2019-2020

Course Instructors: Mr.S.Jayakumar,AP/ECE
Mrs.T.Leela Priyadharshini,AP/ECE
SSMIET,Dindigul

Course Outcome:

On completion of the course, students will be able to gain knowledge of the architecture and functionality of microcontrollers or microprocessors commonly used in embedded systems.

Course Type: Self Framed

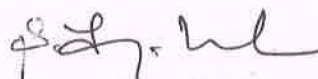
Assessment Mode


Attendance: 30 hours

Number of Participants: 10

Scheme of Exam: MCQ




Course Co-ordinators


Dr.D.SENTHIL KUMARAN, M.B., M.B., MUSE
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.


HoD/ECE



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

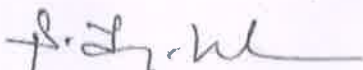
Dindigul - Palani Highway, Dindigul - 624 002.
Email:ssmiedt@gmail.com Website:www.ssmiet.ac.in

Department of Electronics and Communication Engineering

VAC on "Embedded Programming"

Attendance sheet

| S.No | Register number | Name of the Student | 25.01.2020 | 29.02.2020 | 28.03.2020 |
|------|-----------------|---------------------|------------|------------|------------|
| 1 | 922116106002 | ABINAYA D | P | P | P |
| 2 | 922116106003 | AJITHA G | P | P | P |
| 3 | 922116106009 | BALAJI K.G | P | P | P |
| 4 | 922116106016 | DEEPA T | P | P | P |
| 5 | 922116106017 | DEEPIKA R | P | P | P |
| 6 | 922116106020 | DHAMODHARAN A | P | P | P |
| 7 | 922116106021 | DHARANI S | P | P | P |
| 8 | 922116106023 | GEETHA J | P | P | P |
| 9 | 922116106026 | HEMALATHA K | P | P | P |
| 10 | 922116106027 | ISHWARYA V | P | P | P |

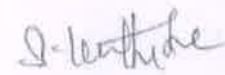

Faculty Incharges

1.S.Jayakumar,AP/ECE

2.T.Leela Priyadharsini, AP/ECE




Dr.D.SENTHIL KUMARAN, M.B., Ph.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.


HOD/ECE

Dr.S. KARTHIGAI LAKSHMI
Professor & Head
Department of ECE
SSM Institute of Engg & Tech
Dindigul - 624 002

SSM Institute of Engineering and Technology
Dept of ECE-VAC-Embedded programming-Test (10*1=10)

- 1. Which memory storage is widely used in PCs and Embedded Systems?**
 - a) EEPROM
 - b) Flash memory
 - c) SRAM
 - d) DRAM

- 2. Which level simulates the algorithms that are used within the embedded systems?**
 - a) algorithmic level
 - b) switch level
 - c) gate level
 - d) circuit level

- 3. How an embedded system communicate with the outside world?**
 - a) Memory
 - b) Output
 - c) Peripherals
 - d) Input

- 4. Which of the following helps in reducing the energy consumption of the embedded system?**
 - a) emulator
 - b) debugger
 - c) simulator
 - d) compilers

- 5. Which of the following unit protects the memory?**
 - a) memory management unit
 - b) peripheral unit
 - c) execution unit
 - d) bus interface unit



Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po);
Palani Road, Dindigul - 624 002.

6. Which of the following offers external chips for memory and peripheral interface circuits?
- a) Embedded system
 - b) Peripheral system
 - c) Microcontroller
 - d) Microprocessor
7. What is approximate data access time of SRAM?
- a) 2ns
 - b) 10ns
 - c) 60ns
 - d) 4ns
8. What does PCM stand for?
- a) peculiar code modulation
 - b) pulse codec machine
 - c) pulse code modulation
 - d) peripheral c
9. Which interrupts generate fast interrupt exception?
- a) software interrupt
 - b) hardware interrupt
 - c) internal interrupt
 - d) external interrupt
10. Which one of the following offers CPUs as integrated memory or peripheral interfaces?
- a) Memory system
 - b) Embedded system
 - c) Microcontroller
 - d) Microprocessor




Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.

K. G Balaji

SSM Institute of Engineering and Technology

VAC-Embedded Programming-Test (10*1=10)

Duration 10 mins

1. Which memory storage is widely used in PCs and Embedded Systems?

- a) EEPROM
- b) Flash memory
- c) SRAM
- ☒ d) DRAM

9/10

2. Which level simulates the algorithms that are used within the embedded systems?

- ☒ a) algorithmic level
- b) switch level
- c) gate level
- d) circuit level

3. How an embedded system communicate with the outside world?

- a) Memory
- b) Output
- ☒ c) Peripherals
- d) Input

4. Which of the following helps in reducing the energy consumption of the embedded system?

- a) emulator
- b) debugger
- c) simulator
- ☒ d) compilers

5. Which of the following unit protects the memory?

- ☒ a) memory management unit
- b) peripheral unit
- c) execution unit
- d) bus interface unit



Dr. D. Senthil Kumar

Dr. D. SENTHIL KUMARAN, M.E., Ph.D., (MUS),
Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.

6. Which of the following offers external chips for memory and peripheral interface circuits?

- a) Embedded system
- b) Peripheral system
- ☒ c) Microcontroller
- d) Microprocessor

7. What is approximate data access time of SRAM?

- a) 2ns
- b) 10ns
- c) 60ns
- ☒ d) 4ns

8. What does PCM stand for?

- a) peculiar code modulation
- b) pulse code machine
- ☒ c) pulse code modulation
- d) peripheral c

9. Which interrupts generate fast interrupt exception?

- a) software interrupt
- b) hardware interrupt
- c) internal interrupt
- ☒ d) external interrupt

10. Which one of the following offers CPU's as integrated memory or peripheral interfaces?

- a) Memory system
- b) Embedded system
- ☒ c) Microcontroller
- d) Microprocessor




Dr.D.SENTHIL KUMARAN, M.B., Ph.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY

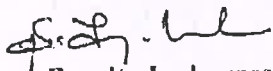
Dindigul - Palani Highway, Dindigul - 624 002.
Email: ssmietdgle@gmail.com | Website: www.ssmiet.ac.in

Department of Electronics and Communication Engineering

VAC on "Embedded Programming"

Mark Statement

| S.No | Register number | Name of the Student | Mark Statement |
|------|-----------------|---------------------|----------------|
| 1 | 922116106002 | ABINAYA D | 10 |
| 2 | 922116106003 | AJITHA G | 8 |
| 3 | 922116106009 | BALAJI K.G | 9 |
| 4 | 922116106016 | DEEPA T | 10 |
| 5 | 922116106017 | DEEPIKA R | 9 |
| 6 | 922116106020 | DIHAMODHARAN A | 8 |
| 7 | 922116106021 | DIHARANI S | 8 |
| 8 | 922116106023 | GEETHA J | 7 |
| 9 | 922116106026 | HEMALATHA K | 10 |
| 10 | 922116106027 | ISHWARYA V | 10 |


Faculty Incharges

1.S.Jayakumar.AP/ECE

2.T.Leela Priyadharsini. AP/ECE





Dr.D.SENTHIL KUMARAN, M.B., Ph.D., (MUS),

Principal

SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC on "Embedded Programming"

25.01.2020, 29.02.2020 & 28.03.2020

FEEDBACK FORM

Name of the Participant: ASITHA G

Year/Sem : IV / VII

| S.No | Question | Excellent | Good | Satisfactory |
|------|---|-----------|------|--------------|
| 1 | Did the VAC enlighten your mind | ✓ | | |
| 2 | Whether your expectation gets satisfied | | ✓ | |
| 3 | Whether the session was interactive | ✓ | | |
| 4 | Knowledge gained from this VAC is | | ✓ | |
| 5 | Was the VAC well organized | ✓ | | |

Comments on session:

well organized

Asitha G
Signature of the Participant



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC on "Embedded Programming"

25.01.2020, 29.02.2020 & 28.03.2020

FEEDBACK FORM

Name of the Participant: DHARMODHARAN A

Year/Sem : IV / VII

| S.No | Question | Excellent | Good | Satisfactory |
|------|---|-----------|------|--------------|
| 1 | Did the VAC enlighten your mind | ✓ | | |
| 2 | Whether your expectation gets satisfied | | ✓ | |
| 3 | Whether the session was interactive | | ✓ | |
| 4 | Knowledge gained from this VAC is | ✓ | | |
| 5 | Was the VAC well organized | | ✓ | |

Comments on session:



Dr.D.Senthil Kumar

Dr.D.SENTHIL KUMARAN, M.B., Ph.D., (MUS).

Principal

SSM Institute of Engineering and Technology

Kuttathupatti Village, Sindalagundu (Po)

Palani Road, Dindigul - 624 002.

Dharmodharan A
Signature of the Participant



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC on "Embedded Programming"

25.01.2020, 29.02.2020 & 28.03.2020

FEEDBACK FORM

Name of the Participant: Geetha J

Year/Sem : IV/VII

| S.No | Question | Excellent | Good | Satisfactory |
|------|---|-----------|------|--------------|
| 1 | Did the VAC enlighten your mind | ✓ | | |
| 2 | Whether your expectation gets satisfied | ✓ | | |
| 3 | Whether the session was interactive | | ✓ | |
| 4 | Knowledge gained from this VAC is | | ✓ | |
| 5 | Was the VAC well organized | ✓ | | |

Comments on session:

Signature of the Participant



SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VAC on "Embedded Programming"

25.01.2020, 29.02.2020 & 28.03.2020

FEEDBACK FORM

Name of the Participant: Ishwarya V

Year/Sem : IV/VII

| S.No | Question | Excellent | Good | Satisfactory |
|------|---|-----------|------|--------------|
| 1 | Did the VAC enlighten your mind | ✓ | | |
| 2 | Whether your expectation gets satisfied | ✓ | | |
| 3 | Whether the session was interactive | ✓ | | |
| 4 | Knowledge gained from this VAC is | | ✓ | |
| 5 | Was the VAC well organized | | ✓ | |

Comments on session:



Signature of the Participant

Dr.D.SENTHIL KUMARAN, M.E., Ph.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Kuttathupatti Village, Sindalagundu (Po).
Palani Road, Dindigul - 624 002.

Participation Certificate

This certificate is proudly Presented to

Balaji K.G

SSM Institute of Engineering and Technology for participation in the Value Added
Course -Embedded Programming on 25.01.2020, 29.02.2020 and 28.03.2020.



D.D.
D.D. SENTHIL KUMAR, M.E., M.D., (MUS),
Principal
SSM Institute of Engineering and Technology
Kuttiahupatti Village, Sindalagundu (Po),
Palani Road, Dindigul - 624 002.