Certificate Course

On

Arduino Programming

10.01.2022 to 05.02.2025

Coordinator: Smt. Saleha Tabassum

K.S.R.M. COLLEGE OF ENGINEERING
(UGC-AUTONOMOUS)
Kadapa, Andhra Pradesh, India – 516 005
Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.
An ISO 14001:2004 & 9001: 2015 Certified Institution

Department of Electrical and Electronics Engineering

Lr. / KSRMCE / **EEE** / 2021-22 /

Date: 06.01.2022

To
The Principal,
K.S.R.M.College of Engineering (A), Kadapa.

//THROUGH PROPER CHANNEL//

Sub: KSRMCE – (EEE) – Permission for Conducting a Certification Course on "Arduino Programming" for B.Tech III Semester Students – Request for Permission – Reg.

Respected Sir,

It is being brought to your kind notice that, I Smt. Saleha Tabassum, Assistant Professor from Department of EEE is organizing a Certification Course on "**Arduino Programming**" for B.Tech III Semester students, from 10.01.2022 to 05.02.2022. In this regard, I request you to kindly permit for organizing the above mentioned certification course, for which kind of act we would be grateful to you sir.

The Resource persons of the workshop:
1. N. Siddhik, Assistant Professor in EEE, KSRMCE (A).

forwarded to Principal sir

Thanking you Sir,

Yours Faithfully

(Smt. Saleha Tabassum)
(Assistant Professor/EEE)

Permitted
V. S. Murthy

K.S.R.M. COLLEGE OF ENGINEERING
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Department of Electrical and Electronics Engineering

Cr./KSRMCE/(**Department of E.E.E**)/2021-22/

Date: 07.01.2022

Circular

It is hereby informed that the department of Electrical and Electronics Engineering is organizing a Certification Course on "**Arduino Programming** " for B.Tech V Semester students, from 10.01.2022 to 05.02.2022. The resource person is N. Siddhik, Assistant Professor in EEE, KSRMCE. In this Context, I request the students to register their names with the concerned coordinator on or before 08.01.2022. The details of the Workshop are as follows:

Name of the Event	Certification Course
Name of the Course	**Arduino Programming**
Date(s)	10.01.2022 to 05.02.2022
Resource persons	N. Siddhik, Assistant Professor in EEE,, KSRMCE.
Venue	SJ – 111 (Seminar Hall)
Faculty Coordinator	Smt. Saleha Tabassum, Assistant Professor in EEE, KSRMCE

Head of the Department

HEAD
Department of Electrical &
Electronics Engineering
K.S.R.M. College of Engineering
Kadapa -516003.

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Department of Electrical and Electronics Engineering

List of Registered Participants

Name of the Event	Certification Course
Name of the Course	**Arduino Programming**
Date(s)	10.01.2022 to 05.02.2022
Timings	03:00 PM to 5:00 PM
Resource persons	N. Siddhik, Assistant Professor in EEE
Venue	SJ – 114
Faculty Coordinator	Smt. Saleha Tabassum, Assistant Professor in EEE

S.No	Roll Number	Name Of The Student	Signature
1	209Y1A0201	**Abbarathi Gopi Charan**	A. Gopicharan
2	209Y1A0202	Adimulam Gangadhar	A. Gangadhar
3	209Y1A0203	Ambavaram Sanjana	Sanjana
4	209Y1A0204	Bandi Neeraja Reddy	B. Neeraja Reddy
5	209Y1A0205	Beri Yaswanth	B. Yaswanth
6	209Y1A0206	Chemikala Rama Devi	C. Ramadevi
7	209Y1A0207	Dasari Sai Pavan	Sai Pavan
8	209Y1A0210	Duggireddy Tejaswini	D. Tejaswini
9	209Y1A0211	Gaddam Harika	G. Harika
10	209Y1A0212	Gadwala Lingamaiah	Lingamaiah
11	209Y1A0217	**Karnatakam Likhitha**	K. Likhitha
12	209Y1A0218	Katika Mohammed Kaif Ali	Alif

S.No	Roll Number	Name Of The Student	Signature
13	209Y1A0227	Mudda Maha Lakshmi	M. Mahalakshmi
14	209Y1A0228	Muppalla Pavan Kumar	M. Pavan kumar
15	209Y1A0229	Nareddy Sasi Rekha	N. Sasi Rekha
16	209Y1A0230	Naruboina Naveen Kumar	N. Naveen kumar
17	219Y5A0201	Anke Nagarjuna	A. Nagarjuna
18	219Y5A0202	Arakata Vemula Venkata Yaswanth	A. venkata Yaswanth
19	219Y5A0203	Busagani Chandra Kumar	B. Chandra
20	219Y5A0204	Mayakuntla Srinidhi	M. Srinidhi

Coordinator

Head of the Department

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Department of Electrical and Electronics Engineering
LabVIEW Programming
(certification Course)

Module 1: **(10hrs)**

Introduction- Software Environment-Front Panel Windows-Block Diagram Window-Icon/Connector Pane-Creating and Saving a VI- Front Panel Toolbar- Block Diagram Toolbar-Palettes-Shortcut Menus-Property Dialog Boxes- Front Panel Controls and Indicators- Block Diagram-Data Types- Data Flow Program-Icon And Connector Pane- Building a Connector Pane- Displaying SubVIs and Express VIs as Icons Or- Creating SubVIs from Sections of A VI.

Module 2: REPETITION AND LOOPS **(10hrs)**

For Loops-While Loops-Structure Tunnels-Terminals Inside Or Outside Loops - Shift Registers-Feedback Nodes-Control Timing-Array- One-Dimensional Array-Two-Dimensional Arrays-Creating Multidimensional Arrays-Array Operations-Matrix Operations With Arrays- Clusters- Creating Cluster Controls and Indicators- Creating Cluster Constant- Conversion Between Arrays and Clusters- Plotting Data- Waveform Graph-Charts- Waveform Data Type- Intensity Graphs and Charts

Module 3 : Application of LabVIEW **(10hrs)**

Build a VI to generate sine waveform- LabVIEW: User Login Interface- Count LED/Relay Turn On/Off - Temperature Sensing Using LabVIEW- TRAFFIC LIGHT SIGNAL USING LabVIEW- Animated Fan Speed Control in LabVIEW- NI-DAQmx multi-channel data acquisition LabVIEW program

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Course Schedule:

S.no	Date	Topic	No. of Hours
		Module-1	
1	10.01.2022	Introduction to embedded systems, Components of embedded system, Advantages and applications of embedded systems.	2
2	11.01.2022	Different Microcontroller Architectures (CISC, RISC, ARISC)	2
3	12.01.2022	Introduction to ARDUINO, ARDUINO History and Family.	2
4	17.01.2022	General Hardware Interfacings: LED's Switches Seven Segment Display	2
5	18.01.2022	Multi Segment Displays Relays (AC Appliance Control) LCD	2
		Module-2	
6	19.01.2022	· Buzzer · IR Sensors · Other Digital Sensors	2
7	20.01.2022	How to connect and work with different sensors, such as Humidity, Proximity,	2
8	21.01.2022	IR Motion, Accelerometer, Sound,	2
9	22.01.2022	Distance, Pressure, Thermal etc., to ARDUINO Board.	2
10	24.01.2022	Reading data from analog and digital sensors on Serial Monitor/LCD Monitor,	2
11	25.01.2022	Work with LED Controlled by Switch/potentiometer, 7 segment displays.	2
		Module-3	
12	27.01.2022	How to connect relays and servomotors to ARDUINO Board	2
13	28.01.2022	ARDUINO based home automation	2
14	02.02.2022	ARDUINO Based Solar Street Light system 3	2
15	03.02.2022	ARDUINO Based Solar Street Light system 3	2
16	04.02.2022	11 ARDUINO Based Car Parking System	2
17	05.01.2022	11 ARDUINO Based Car Parking System	2
		Total	34

Resource Person

N. Siddhik, Assistant Professor in EEE

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Department of Electrical and Electronics Engineering

Attendance Sheet

Roll Number	10.1	11.1	12.1	17.1	18.1	19.1	20.1	21.1	22.1	24.1	25.7	27.1	28.1	2.2	3.2	4.2	5.2
209Y1A0201	P	P	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P
209Y1A0202	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	A	P
209Y1A0203	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P	P	P
209Y1A0204	P	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P
209Y1A0205	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
209Y1A0206	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P
209Y1A0207	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P	P
209Y1A0210	A	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P
209Y1A0211	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	P	P
209Y1A0212	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P
209Y1A0217	P	P	A	P	P	P	P	P	P	P	A	P	P	P	A	P	P
209Y1A0218	A	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P

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Roll Number	10.1	11.1	12.1	17.1	18.1	19.1	20.1	21.1	22.1	24.1	25.7	27.1	28.1	2.2	3.2	4.2	5.2
209Y1A0227	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P	A	P
209Y1A0228	A	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P
209Y1A0229	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	A
209Y1A0230	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	P	P
219Y5A0201	P	P	A	P	P	P	P	P	P	P	P	P	P	A	P	P	P
219Y5A0202	P	A	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P
219Y5A0203	P	P	P	P	P	P	A	P	P	P	P	P	A	P	P	P	P
219Y5A0204	P	P	P	A	P	P	P	P	P	A	P	P	P	P	A	P	P

Coordinator

Head of The Department

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Department of Electrical and Electronics Engineering

Organising

Certification Course on

Arduino Programming

From

10.01.2022 to 05.02.2022

Venue

SJ-114

Resource Person

N.Siddhik

Assistent Professor,

EEE-Dept

Faculty Coordinator

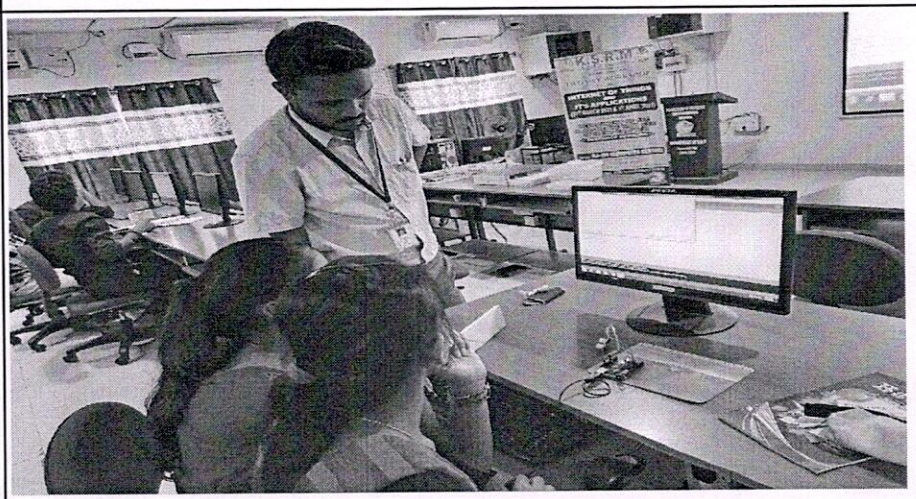
Smt.Saleha Tabassum

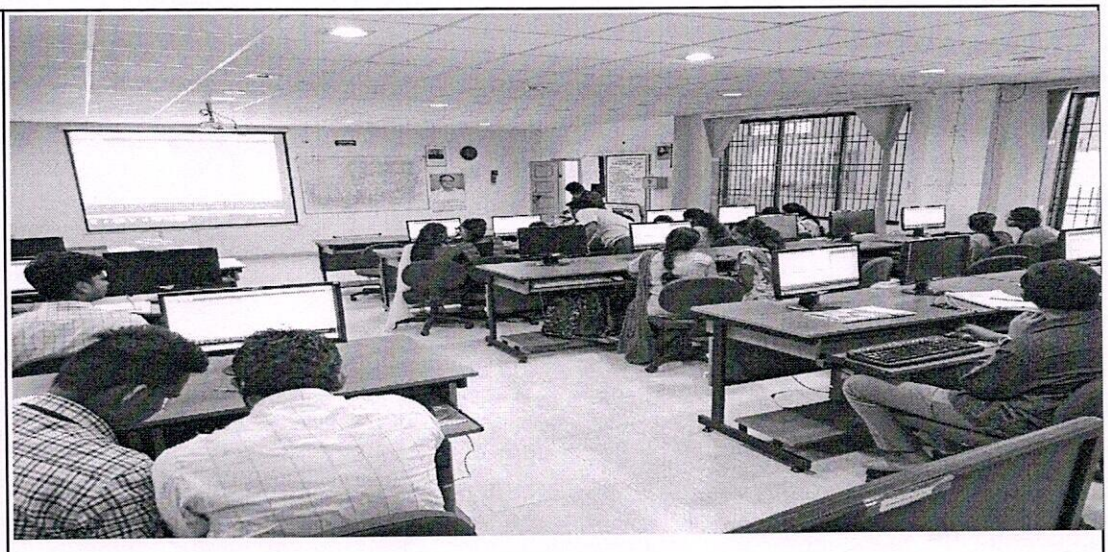
Assistant Professor,

EEE-Dept

Department of Electrical and Electronics Engineering

Activity Report

Name of the Event	Certification Course
Name of the Course	**Arduino Programming**
Date(s)	10.01.2022 to 05.02.2022
Target Audience	B.Tech V Semester Students
Number of Students Participated	20
Resource Persons	N. Siddhik, Assistant Professor in EEE
Organizer/Supporting Team	Smt. Saleha Tabassum, Assistant Professor in EEE
Report	Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board. To do so you use the Arduino programming language (based on Wiring), and the Arduino Software (IDE), based on Processing. Overall students learnt the basics of working with Arduino and gained basic knowledge of various Arduino development boards; Programming environment, onboard features of Arduino Uno: I/O, Analog, PWM; Arduino shields and IoT using Arduino. Feedback students was collected and it suggested that they welcomed this initiative and they are motivated to explore more dimension in this platform also they are willing to use this board in their projects in future
Photos	



Coordinator

Head of the Department

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Department of E.E.E

COURSE COMPLETION CERTIFICATE

on

ARDUINO PROGRAMMING

This is to certify that Mudda Maha Lakshmi (209Y1A0227) has participated in "Arduino Programming" , During 10.01.2022 to 05.02.2022 organised by the Department of Electrical and Electronics Engineering, K.S.R.M. College of Engineering (Autonomous), Kadapa

Dr. K. Amaresh
HOD, EEE

Dr. V.S.S. Murthy
Principal

K.S.R.M. COLLEGE OF ENGINEERING

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KSNR

Department of E.E.E

COURSE COMPLETION CERTIFICATE

on

ARDUINO PROGRAMMING

This is to certify that Anke Nagarjuna (219Y5A0201) has participated in "Arduino Programming" , During 10.01.2022 to 05.02.2022 organised by the Department of Electrical and Electronics Engineering, K.S.R.M. College of Engineering (Autonomous), Kadapa

Dr. K. Amaresh
HOD, EEE

Dr. V.S.S. Murthy
Principal

Feedback on Certification Course "Arduino Programming"

* Required

1. Roll Number *

_____

2. Name of the Student *

_____

3. Is the course content met your expectation *

Mark only one oval.

- ◯ Yes
- ◯ No

4. Is the lecture sequence * well planned

Mark only one oval.

- ◯ Yes
- ◯ No

5. The contents of the course is explained * with examples

Mark only one oval.

- Agree
- Strongly Agree
- disagree

6. Is the course exposed you to the new knowledge and practices

Mark only one oval.

- Agree
- Strongly Agree
- disagree

7. Is the lecturer clear and easy to understand *

Mark only one oval.

1
2
3
4
5

8. Rate the value of course in increasing your skills *

Mark only one oval.

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

K.S.R.M. COLLEGE OF ENGINEERING

(AUTONOMOUS)

Department of Electrical & Electronics Engineering

Feedback of students on Certification Course on "Arduino Programming"

S.No	Roll Number	Name of the Student	Is the course content met your expectation	Is the lecture sequence well planned	The contents of the course is explained with examples	Is the course exposed you to the new knowledge and practices	Is the lecturer clear and easy to understand	Rate the value of course in increasing your skills
1	209Y1A0201	**Abbarathi Gopi Charan**	Yes	Yes	Strongly	Strongly agree	4	4
2	209Y1A0202	Adimulam Gangadhar	Yes	Yes	Strongly	Strongly agree	4	3
3	209Y1A0203	Ambavaram Sanjana	Yes	Yes	agree	Strongly agree	4	4
4	209Y1A0204	Bandi Neeraja Reddy	Yes	Yes	agree	Strongly agree	5	4
5	209Y1A0205	Beri Yaswanth	Yes	Yes	Strongly	Strongly agree	5	4
6	209Y1A0206	Chemikala Rama Devi	Yes	Yes	agree	Strongly agree	5	5
7	209Y1A0207	Dasari Sai Pavan	Yes	Yes	agree	Strongly agree	5	5
8	209Y1A0210	Duggireddy Tejaswini	Yes	Yes	agree	Strongly agree	5	5
9	209Y1A0211	Gaddam Harika	Yes	Yes	agree	Strongly agree	3	4
10	209Y1A0212	Gadwala Lingamaiah	Yes	Yes	Strongly	Strongly agree	3	4
11	209Y1A0217	**Karnatakam Likhitha**	Yes	Yes	Strongly	Strongly agree		5
12	209Y1A0218	Katika Mohammed Kaif Ali	Yes	Yes	agree	Strongly agree	5	4
13	209Y1A0227	Mudda Maha Lakshmi	Yes	Yes	agree	Strongly agree	5	5
14	209Y1A0228	Muppalla Pavan Kumar	Yes	Yes	Strongly	Strongly agree	5	5
15	209Y1A0229	Nareddy Sasi Rekha	Yes	Yes	Strongly	Strongly agree	5	5
16	209Y1A0230	Naruboina Naveen Kumar	Yes	Yes	Strongly	Strongly agree	5	5
17	219Y5A0201	Anke Nagarjuna	Yes	Yes	agree	Strongly agree	4	4

K.S.R.M. COLLEGE OF ENGINEERING

(AUTONOMOUS)

Department of Electrical & Electronics Engineering

Feedback of students on Certification Course on "Arduino Programming"

S.No	Roll Number	Name of the Student	Is the course content met your expectation	Is the lecture sequence well planned	The contents of the course is explained with examples	Is the course exposed you to the new knowledge and practices	Is the lecturer clear and easy to understand	Rate the value of course in increasing your skills
18	219Y5A0202	Arakata Vemula Venkata	Yes	Yes	agree	Strongly agree	4	5
19	219Y5A0203	Busagani Chandra Kumar	Yes	Yes	agree	Strongly agree	4	5
20	219Y5A0204	Mayakuntla Srinidhi	Yes	Yes	agree	Strongly agree	3	5

Coordinater

HOD

HEAD
Department of Electrical &
Electronics Engineering
K.S.R.M. College of Engineering
Kadapa -516003.

Agenda

- About us / Introductions
- Software Installation
- What can it do? Who cares?
- Blink Sketch □ Disco Lights
- Using Variables
- If() statement □ reading buttonPress
- Analog Sensors □ Fading
- Making Sound

Arduino Board

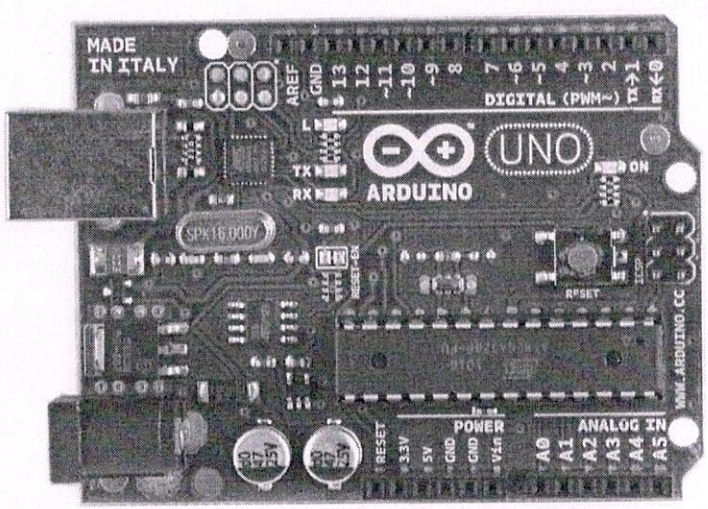
"Strong Friend" Created in Ivrea, Italy

in 2005 by Massimo Banzi & David Cuartielles

Open Source Hardware

Atmel Processor

Coding is accessible (C++, Processing, ModKit and MiniBloq)



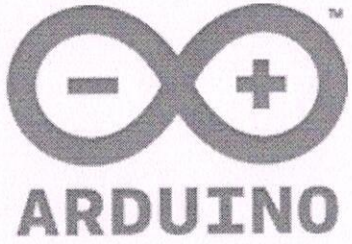
Arduino Software Installation

Open Source

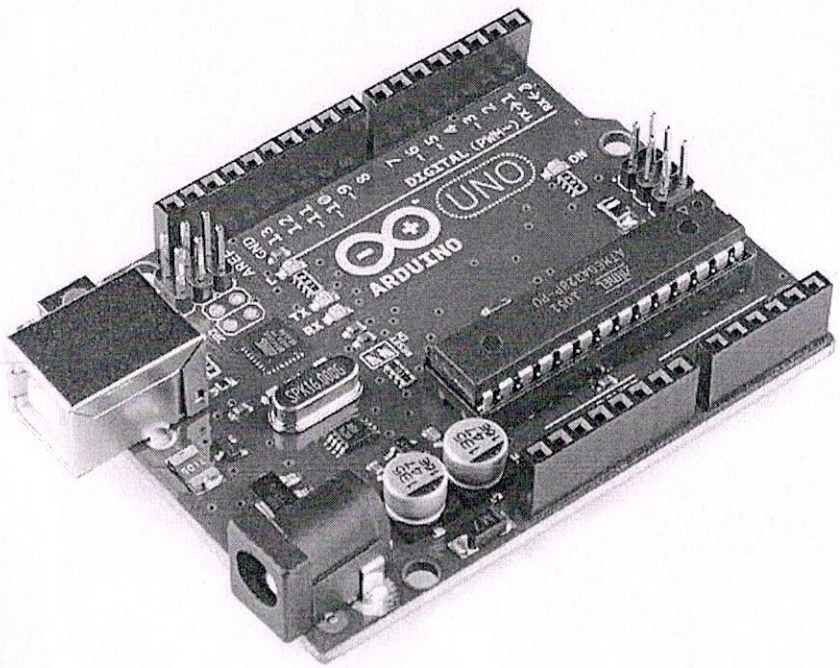
Free

Available on-line with resources at:

www.arduino.cc



What can it do?



- Great for prototyping ideas
- Access to multiple I/O
- Drive motors, turn on lights, trigger controls.
- Low Power requirements
- Flexible / Open-source

Who cares?

Hackers / Makers

Engineers

Artists

Musicians

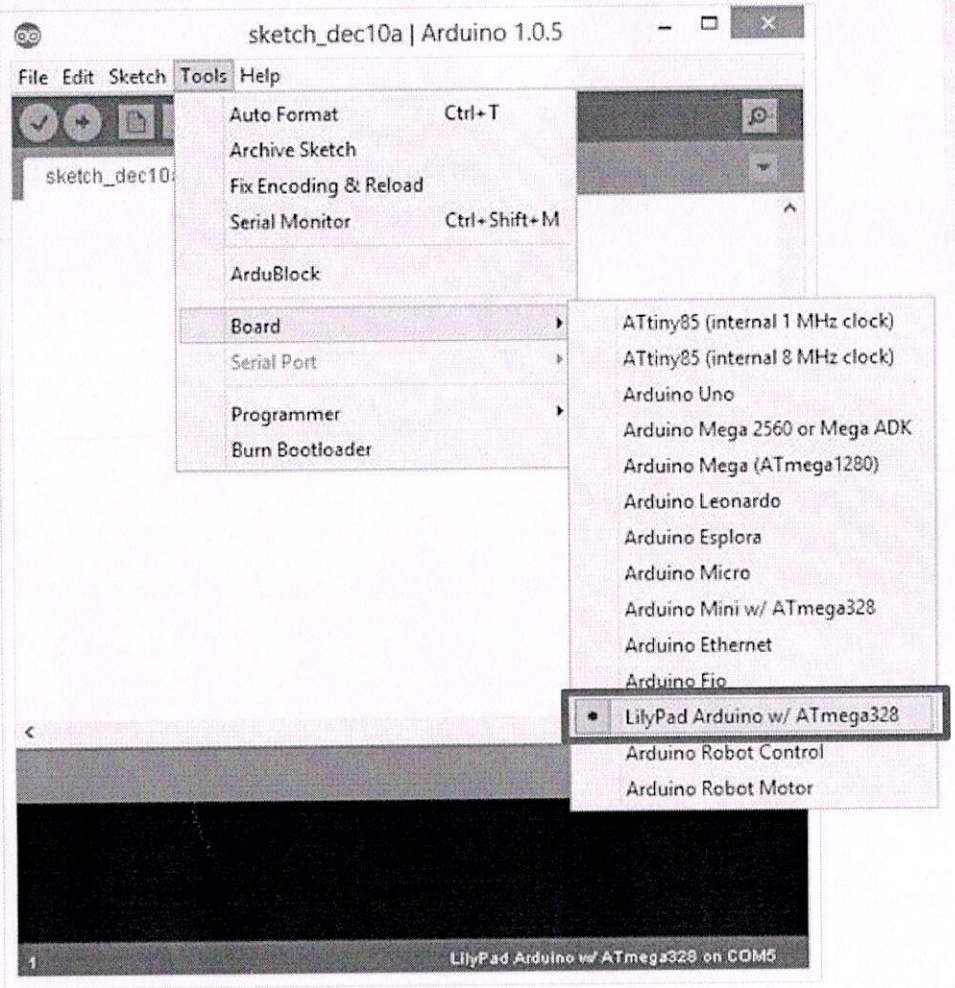
Kids!

Teachers!!

You!!!

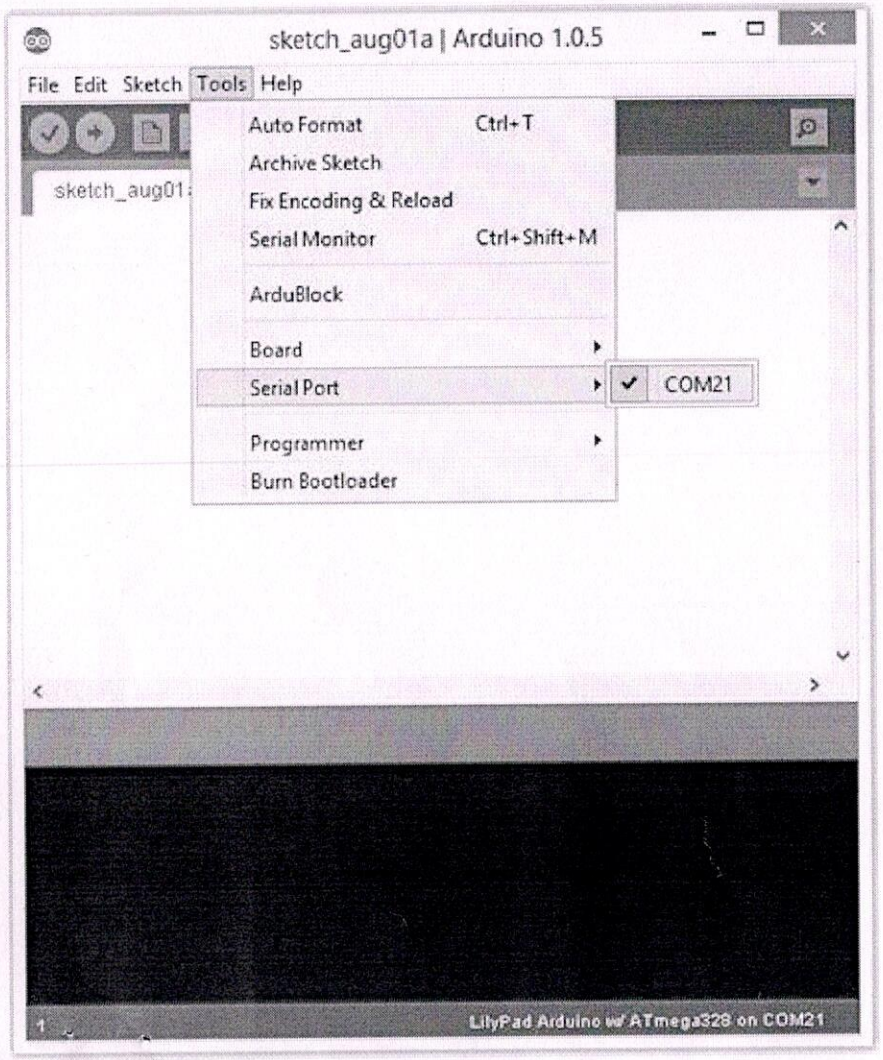
Setup Board Type

Tools → Board → Arduino Uno



Setup Serial COM Port

Tools → Serial Port →



Notes:

PC –
Highest **COM #**
Mac –
/dev/tty.usbserial-A####xxx

Analog and Digital

- All Arduino signals are either Analog or Digital
- All computers including Arduino, only understand Digital
- It is important to understand the difference between Analog and Digital signals since Analog signals require an Analog to Digital conversion

Input vs. Output

Everything is referenced from the perspective of the microcontroller.

Inputs is a signal going into the board.

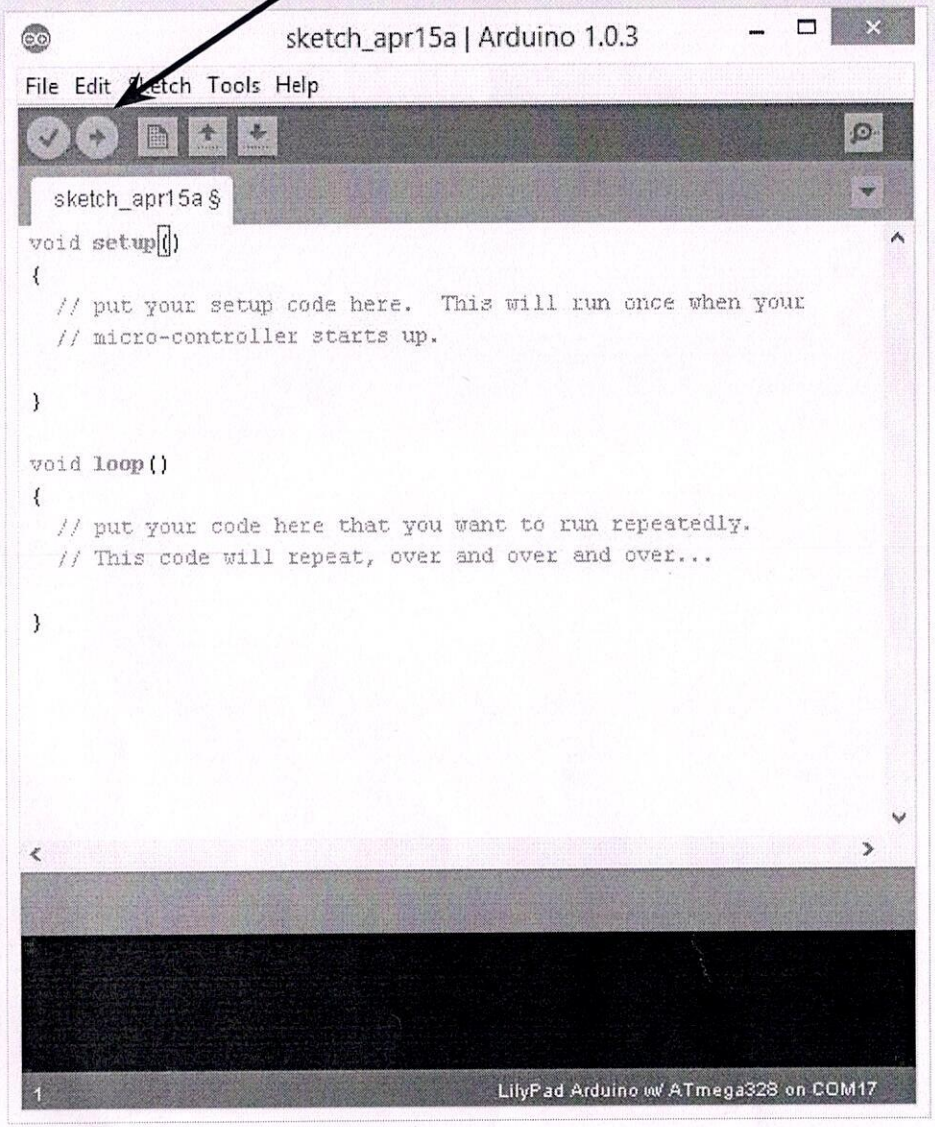
Output is any signal exiting an electrical system

- Almost all systems that use physical computing will have some form of output

- Often – Outputs include LEDs, a motor, a servo, a piezo element, a relay and an RGB LED

Basic Program

upload



Two required routines / methods / functions:

```
void setup()
{
// runs once
}

void loop()
{
// repeats forever!!!
}
```

Let's get to hacking…

Project #1 – Blink

"Hello World" of Physical Computing

Psuedo-code – how should this work?