

CLASS NOTES TO UNIT: ACADEMIC WRITING (Video lesson + Class + Portfolio assignments)

In this unit we are going to:

- Observe the basic rules for academic writing (1).
- Watch some videos to enlarge the views about this topic (2).
- Write a piece in academic style (3).

Parts 1-2 will be dealt with in the video lesson and in class. Part 3 must be done after the class and included in the students' portfolio

1. Introduction: Let's have a look at some sections of students' description of their engineering projects:

The basic aim of this project is to transmit electric power wirelessly.

Wireless Power Transfer (WPT) or wireless energy transmission is the transmission of electrical power from a power source to a consuming device without using solid wires or conductors. Wireless transmission is used to power electrical devices in cases where interconnecting wires are inconvenient, hazardous, or are not possible.

Wireless power techniques fall into two categories, non-radiative and radiative. In near-field or non-radiative techniques, power is transferred over short distances by magnetic fields using inductive coupling between coils of wire. In radiative or far-field techniques, also called power beaming, power is transmitted by beams of electromagnetic radiation, such as microwaves or laser beams.



Fig. 1: Prototype of Wireless Power Transfer Model

Working: The Circuit consists of two main parts, the first one is the Transmitter and second one is the Receiver.

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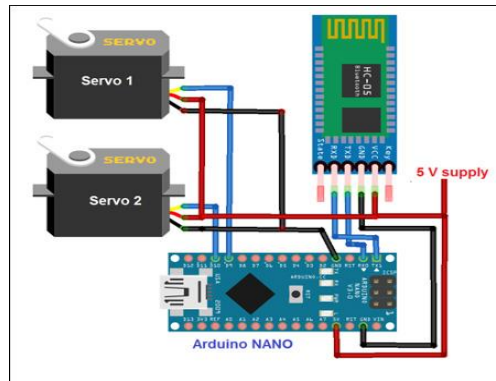
Bluetooth controlled missile launcher

This Project deals with a device to control a missile launcher model through a smartphone using an android Bluetooth application. The model of the missile launcher is built with two servo motors. One servo motor turns the missile launcher left and right, while another servo motor moves the missile launcher up and down. These two servo motors are controlled by means of an android Bluetooth application in a smartphone. The user presses buttons in the application to move missile launcher up/down or to turn left/right, whereas the application will send commands through phone inbuilt Bluetooth.

The application demonstrates the control of two servo motors through a smartphone with the help of Bluetooth module and Arduino NANO.

In order to start building the Project, a schematic diagram, its connections and its operation are required:

Schematic diagram



Circuit description:

As shown in figure 1, there are only 4 components in the circuit, one Bluetooth module HC-05, one Arduino NANO board, and 2 servo motors.

Circuit operation:

In addition, the circuit is energized by giving 5 V through USB or through an external 5 V power supply. When supply is given, both motor attains 0° and missile launcher points to its initial position.

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Cell Phone Detector Circuit

The most common electronic equipment used nowadays is Cell Phone or Mobile Phone. With advancement in communication technology, the requirement of cell phones has increased dramatically. A cell phone typically transmits and receives signals in the frequency range of 0.9 to 3GHz. This article provides a simple circuit to detect the presence of an activated cell phone by detecting these signals.

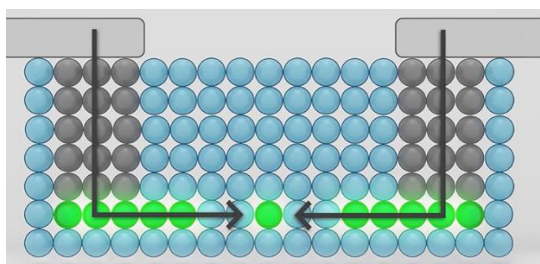
Two circuits have been designed that act as Cell Phone Detector Circuit, one using a combination of Schottky Diode and a Voltage Comparator and the other using a BiCMOS Op-Amp.



Scientists Create Single-Atom Transistor

Transistors **consisting** only **of** several-atom clusters or even single atoms could become the building blocks of a new generation of computers with unparalleled memory and processing power. **However**, first researchers need to develop a way to mass-produce tiny on-off switches.

Fortunately, researchers at the National Institute of Standards and Technology (NIST), together with colleagues at the University of Maryland, have developed a step-by-step method **for making** atomic-scaled transistors. Using the instructions, this group has become **not only** the second in the world to construct a single-atom transistor, **but also** the first to fabricate a series of single-electron transistors with atomic-scale control over the devices' geometry.



From these samples, and focusing on the highlighted expressions (also the titles and figure captions), let's elicit some of the rules for technical writing and look for variations (match the ones given with the samples, and write some more):

- Write in plain (not informal!) language and short sentences (avoid subordination).
- Explain things before presenting them.
- Avoid first person (use passive).
- Add cohesion to your text through linkers and connectors.

2. More sources: Let's watch these videos and add rules to the box above:

https://www.youtube.com/watch?v=INg_0ygzaGY

<https://www.youtube.com/watch?v=GbWE3iuN6QQ>

<https://www.youtube.com/watch?v=mZQgd2sPxpK>

3. Written assignment for your portfolio: From your 1st term, third year courses:

- Choose a course, and a topic/unit you like.
- Choose a specific language function: describe a process, classify different types of devices, explain how something works.

-Choose the necessary technical words/terms.

-In a table, arrange all this information: course, topic, language function, technical terms.

-Write a paragraph (around 120-150 words) including the basics learnt about academic language; give it a title and a referenced figure. Use connectors, formal language in plain style (short sentences and little subordination), passive voice, and structure the content clearly; avoid contractions, personal opinion and vague words.

TERCER CURSO						
Código	Asignatura	Grupo	Guía Docente	Tipo	Duración	ECTS
Curso 3						
504103001	COMUNICACIONES DIGITALES Idioma: Castellano / English Sancho Gómez, José Luis	G2	ES [2] EN [2]	B	C1	6
504103002	ANÁLISIS Y DISEÑO DE CIRCUITOS Idioma: Castellano / English Lozano Guerrero, Antonio José	G1	ES [2] EN [2]	B	C1	6
504103003	MICROONDAS Idioma: Castellano / English Melcón Álvarez, Alejandro	G2 G1	ES [2] EN [2]	B	C1	6
504103004	INSTRUMENTACIÓN DE COMUNICACIONES Idioma: Castellano / English Monzó Cabrera, Juan	G2	ES [2]	B	C1	7,5
504103005	INGLÉS TÉCNICO Idioma: Castellano / English Carbajosa Palmero, Natalia	G1 G2	EN [2]	B	C1	4,5
504103006	COMUNICACIONES ÓPTICAS Idioma: Castellano / English		ES [2]	B	C2	6

Here is a list of fixed expressions of academic English:

<http://www.phrasebank.manchester.ac.uk/>

Here is a list of connectors that can be helpful:

LINKERS

Contrast

- . **In spite of / Despite** Link two contrasting ideas. Followed by a noun phrase.
- . **Although / (Even) though** Link two contrasting ideas. Followed by a sentence.
- . **However / Nevertheless / Still / Yet / Even so / On the contrary / In contrast**. Introduce a new idea which marks a contrast with previously stated ideas. Introduced by a comma.
- . **On the one hand ... On the other hand**. Links two contrasting ideas / paragraphs.
- . **In contrast to / Contrary to**. Link two contrasting ideas. Followed by a noun phrase.
- . **Whereas** Link two contrasting ideas. Not separated by commas.

Reason and cause

- . **Because / As / Since / Seeing that** Introduce a sentence. Subordinate sentences introduced by because always appear in final position.
- . **Because of / On account of / Owing to / Due to**. Introduce a noun phrase.

Purpose

- . **In order to / So as to** Introduce an infinitive of purpose.
- . **In order that / So that** Introduce a sentence.

Consequence

- . **Consequently / As a consequence / As a result / Therefore**
- . **As a consequence of / As a result of** Followed by a noun phrase.
- . **So** Introduces a sentence. No commas.

Addition

. **Moreover / Furthermore / In addition / Besides / What's more** Used after a strong pause and separated from the sentences. They are introduced by a comma.

. **As well as / In addition to / Besides** Used to add one more piece of information. Followed by a noun phrase.

Exemplification

For example / For instance Introduces an example referring to previously stated ideas.

. **Such as** Introduces an example referring to the last idea.

CONNECTORS

Contrast

. **but / yet:** followed by a noun phrase or a sentence.

'The book is short but / yet interesting'

. **in spite of / despite:** It is placed at the beginning or in the middle of the sentence.

'He arrived on time despite / in spite of getting up late'

although / though/ even though / in spite of the fact that: followed by a complete sentence. They can be placed at the beginning or in the middle of the sentence. If it is placed at the beginning we need to use a comma after the clause.

'Although / though / even though / in spite of the fact that the pupils had not studied, they all passed their exams'.

. **however, nevertheless, even so, on the one hand, on the other hand, on the contrary:**

'He was quite ill however/ nevertheless/ even so, he went to school'

. **while, whereas**

'This film is very interesting, while/whereas that one is quite boring'

Reason and cause

. **because, as since, seeing that:**

'Because / as / since / seeing that it's late, we should go home'

. **because of, on account of, owing to, due to:**

'Because of / on account of / owing to / due to the weather, we stayed at home'

. **in order to, so as to, to:**

'She uses her video in order to / so as to / to record TV programmes'

Add information

. **for example, for instance, such as:**

'Vegetables are a good source of vitamins: for example / for instance, oranges have vitamin C'

. **moreover, furthermore, besides, in addition to:**

'In addition to soul music, she likes rap'

. **apart from, except for:**

'Apart from English, she speaks French'.

Succession

. - **First of all / Firstly / To begin with / First**

- **Second / Secondly / Then ...**

- **Third / Thirdly / After that...**

- **The next stage ...**

- **Finally / in short / to sum up / in conclusion / lastly / last but not least...**

Result

. As a result of:

'As a result of his brave action, he was awarded a military medal.

Therefore, as a result, consequently, for this reason:

'Consequently / for this reason, it always passes its annual road test.

Order

First paragraph

At first sight: A primera vista

First: En primer lugar

First of all: Antes que nada

In the first place: En primer lugar

To start with: Para empezar

Second paragraph

In the second place: En segundo lugar

Second: Segundo

Secondly: En segundo lugar

Third: Tercero

Thirdly: En tercer lugar

Conclusion

Finally: Por último

In conclusion: Para concluir

Lastly: Por último

And eventually: Y finalmente

Adding information

apart from: Aparte de

in addition: Además

in addition to: Además de

What's more: Además; lo que es más

moreover: Además

on top of that: Además

besides: Además

On the one hand: Por una parte

On the other hand: Por otra parte

and eventually: Y finalmente

Contrast

all the same: a pesar de todo

however: sin embargo

instead of: en vez de

in spite of / despite: a pesar de

nevertheless: no obstante

on the contrary: por el contrario

whereas / while: mientras

though / although: aunque

Reason

because of + noun: a causa de

due to + noun: debido a

due to the fact that + sentence: debido a que
for this / that reason: por esta / esa razón
owing to + noun: debido a
owing to the fact that + sentence: debido a que

Result

as a result: como resultado
because of: a causa de
consequently: en consecuencia
so: por lo tanto
that's why: por eso, por esa razón...
therefore: por lo tanto

Expressing facts

actually: en realidad
as a matter of fact: de hecho
in fact: de hecho
really: en realidad

Expressing a personal opinion

as far as I am concerned por lo que a mí respecta
from my point of view desde mi punto de vista
I agree estoy de acuerdo
I disagree no estoy de acuerdo
in my opinion en mi opinión
in my view según lo veo
I think that creo que
it is true that es verdad que
personally personalmente
to be honest, para ser honesto
to tell the truth, a decir verdad

Explain

that is (to say): es decir
in other words: en otras palabras
in short: en resumen
above all: sobre todo
all in all: en general
at least: al menos
basically: básicamente, fundamentalmente
especially: especialmente, sobre todo
essentially: esencialmente
in general: en general
in particular: en particular
more or less: más o menos
on the whole: en general
to a certain extent: hasta cierto punto

Exemplifying

and so on: etcétera
for example: por ejemplo
for instance: por ejemplo
such: as tal(es)como

Summarizing

all in all: en suma
in brief: en resumen

in conclusion: Para concluir
in short: en resumen
on the whole: en general
to sum up: Para resumir

Sequencing

after that: después de eso
all of a sudden: de repente
Finally: Finalmente
First of all: En primer lugar
in the end: al final
in the meantime: mientras tanto
meanwhile: mientras tanto
next: luego
suddenly: de repente
then: entonces, después
while: mientras

