MEETING 13
LINGUISTICS AND COMPUTING

A. LEARNING OBJECTIVES

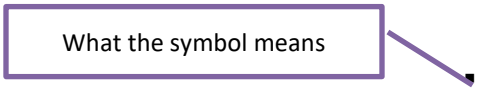
In this module you will know how to use Noun clause in sentences, able to identify noun clause in an article, able to write sentences by using noun clause able to speak about linguistics and computing , understand reading text about linguistics and computing and understand listening text linguistics and computing

B. DESCRIPTION OF NOUN CLAUSE

A Noun clause is a clause that functions as a noun; because the noun clause is a noun, it is used in sentence as either as object of a verb, an object of preposition, or the subject of the sentence. (Deborah Phillips 2001). A Noun clause connector needs connector, the connectors are who, whoever, what, whatever, which whichever etc.

a. The example of noun clause as a subject.

✓ what the symbol means is easy to understand



is function as subject

✓ whoever study computer system must learn language programming.

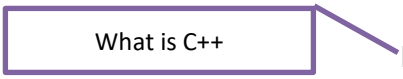
is function as a subject

✓ what is the most challenging computer system is the coding.

is functioned as subject

b. the example of noun clause as an object

✓ I know what is c++



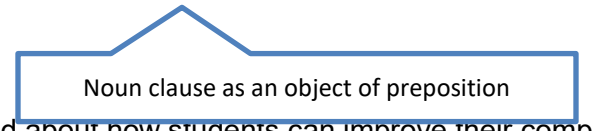
Is functioned as object

✓ The students were able to make a project whenever they were given assignments.

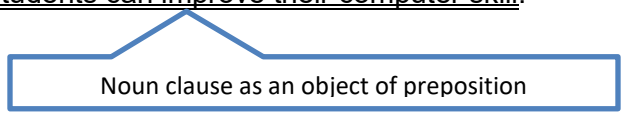
Is functioned as object

c. The example of noun clause as object of preposition

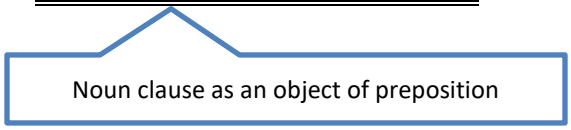
✓ We are concerned <u>about who will do the work.</u>



✓ I have learned <u>about how students can improve their computer skill</u>.



✓ Some people afraid <u>about how to start online business</u>



C. EXERCISE

1. Structure

1.1 Underline the noun clause in the sentences below:

1) Harry is didn't do of what teacher requested.
2) The programmer didn't write for what computer need to act.
3) Alisha is the owner of that charger on the electric cord.
4) My first achievement at computer was when I was able to make my own website.
5) Student's problem was that they are not discipline
6) I understand now that I have to finish my assignment on time.
7) I didn't realize that my phone was ringing
8) How to make a computer program is very challenging
9) What the programmer made was very interesting
10) Most computer users don't know how computer system work inside the motherboard.

1.2 Each of the following sentences contains more than one clause. Underline the subject of the verbs. Circle the connectors. Mark if the sentences are True or False.

1) When the semester finishes is already written in calendar academic.

O True

O False

2) The instruction book how the tool should be fixed.

O True

O False

3) The warning indicated if the computer would be updating soon.

O True

O False

4) Installed application where I can learn programming.

O True

O False

5) They learn to how to make program that is used in to make application.

O True

O False

6) Why the students have to learn computer linguistic has written in academic curriculum.

O True

O False

7) That the computer scientist has not yet finished is highly expected by the computer users.

O True

O False

8) The computer linguistic will be studied that would help students to be better programmer.

O True

O False

9) He always shares ideas with whoever want to know about computer language.

O True

O False

10) I always ask question about coding that will help me to be better programmer.

O True

O False

11) I know about what you are talking about

O True

O False

12) That he won national computer championship was unexpected.

O True

O False

13) Computer programmers know how to deal with error in computer.

O True

O False

14) What make the computer thinks like an expert is the AI

O True

O False

2. Speaking

2.1 work in pair to practice the conversation below

Anne	Are you interested in computer language programming?
Bob	Yes, I study computer so I have to be able to understand machine language.
Anne	What languages program are for robotic
Bob	You can start learning C++ and Java for robotics project.
Anne	Are those easy to learn?
Bob	There is nothing difficult of you like it. It is as easy as playing game. I am pretty good at Java programming.
Anne	Really? Can you teach me?
Bob	Sure. You can join my language programming group if you are interesting in coding. We practice coding every Friday.
Anne	That sounds great. I have always wanted to have group where I can study coding .
Bob	Good. You can start next Friday
Anne	Thank you for inviting me
Bob	My pleasure

2.2 Discuss the questions Below!

https://tilakkc.com.np/category/post

1) Why computer science students need to learn language coding?
2) Where do computer programmers work?
3) How to be come computer programmer?
4) How long should I study to master C++ or Java?
5) What language programming should you learn to be web developer?
6) why there is high level language in computer programming?
7) can you tell me what is the example of high level language?
8) Is the high language easier to learn?
9) What language programming should beginner start from?

Example

Ken Why computer science students need to learn language coding?

Sultan Because if you know coding you will have wider opportunity to get job in computer field, beside most IT jobs require you coding skill.
Where do computer programmers work?

Ken Most offices need computer programmer. Programmers usually spend time in computer terminal in office.

Sultan How to become computer programmer?

Ken There are few things you have to do; first build your skill in language programming, speak English well, second specialize one or more computer language such as C++ or Java. Third get your certification in your specialties. The last finish your study and stay up date with computer development.

Sultan How long should I study to master C++ or Java?

Ken It depends how hard you practice, but in my experience I spent almost 2 years before I fully understood C++ and Java.

Sultan What language programming should you learn to be web developer?

Ken You have to be good at HTML, CSS, PHP and Java.

Sultan Why there is high level language in computer programming?

Ken It is called high language because it is closer to human language

Sultan can you tell me what is the example of high level language?

Ken For example FORTRAN or Pascal, java script

Sultan Is high level language easier to learn?

Ken The theory says, it is easier to read, write and maintain but you still need a lot practices to understand it.

Sultan What language programming should beginner start from?

Ken My suggestion for beginner, start from Java script!

Sultan Thank you very much for your suggestion. I know what to do now

Ken My pleasure

3. Reading

3.1 Underline the noun clauses in the reading text below!

3.2 Read and record loud the reading text in your phone!

Linguistics and Computing

The study of human language and advances in computer science have been closely intertwined. The field of computational linguistics uses computer systems to investigate the structure of natural language. In turn, the area of natural language processing involves the creation of software that can apply linguistic principles to process written or spoken human language (see natural language processing, language translation software, and speech recognition and synthesis).

As simple low-level instruction codes began to evolve into complex high-level programming language, language designers had to struggle to give precise, complete, and unambiguous definitions for the language's structure. This is essential for language users to be confident that their programs will yield the desired results. It is also important that developers trying to implement a language on different hardware platforms and operating systems have rigorous language specifications so the compiler on the new system will produce programs equivalent to those on the system where the language was first developed.

When computer scientists turned to linguistics for help in defining programming languages, they found the work of Noam Chomsky, perhaps the 20th century's preeminent linguist, to be particularly helpful. Chomsky developed a concept of formal language in which grammar could be specified as a series of rules built up a level at a time. For example, at the lowest level, there is an alphabet from which recognized words are generated. Next there are rules for generating phrases (such as a noun phrase consisting of a noun with optional adjectives and a verb phrase consisting of a verb with optional adverbs). In turn, phrases can be combined to form sentences.

Because grammatical structures are created by applying rules to strings of symbols (words), the result is called a generative grammar. Chomsky sought to apply this concept of a "transformational generative grammar" as a universal structure applicable to all human languages. Meanwhile, computer scientists could use formal grammar rules to define the valid statements in programming languages (see also Backus-Naur form). This in turn allows a compiler parser to break down high-level language statements and convert them

into low-level instruction codes that can actually be executed by the CPU (see assembler and parsing).

As new languages and more powerful hardware gave computers increased power to deal with complex systems, computer scientists (and artificial intelligence researchers in particular) applied themselves to the problem of computer processing of human languages. Success in this field might lead not only to computer systems that humans could communicate with far more naturally, but also to automatic machine translation that could, for example, allow an English speaker and a Chinese speaker to communicate via e-mail.

However, developers of natural language systems face formidable challenges. Most fundamentally, while computers process symbols using a restrictive, deterministic procedure that Chomsky classifies as finite state (see finite state machine), human languages must be understood using the more complex transformational grammar. The language processing system must therefore have rules that can cope with the often ambiguous structure of actual human speech. (For example, does the word fly in a given sentence mean an insect, a baseball batted high in the air, or perhaps a zippered opening in one's trousers?)

One way to limit the problem is to deal with a restricted realm of discourse. For example, a natural language "front end" to a database might assume that all input nouns refer to entities that exist in the database, such as employees, positions, salaries, and so on. It then becomes a matter of translating a query such as "How many employees in the human resources department make more than $50,000 a year" into something like:

find quantity (employee department = "human resources") and (employee salary > 50,000)

Understanding unrestricted text such as that found in newspaper stories is much more complex, since fewer assumptions can be made about the subject of the discourse. Here the AI concept of frames can prove useful. A frame is a sort of script that describes the elements of life's common events or transactions. For example, suppose a news story begins "Joe X was arrested yesterday for the murder of Sarah Y. He was arraigned today and bail was denied." A system reading the story might see "arrested" and see that it links to an internal frame called "crime." The crime frame might have slots for "accused person," "charge," "victim," and "custodial status." The system could then interpret the story as indicating that Joe is the accused person, murder is the charge, Sarah is the victim. For the custodial status the system might look to another frame called "arraignment" that

includes the rule that if bail is allowed and paid, the person's status is "released until trial" while if the bail is either not allowed or not paid, the status is "in custody."

Computational linguistics and natural language processing are likely to be of increasing interest in years to come. With the World Wide Web bringing the world's languages into more pervasive contact, the ability to translate or automatically summarize Web pages and e-mail will be very marketable. It is also likely that advanced, secret research in the field is also being carried out by organizations such as the National Security Agency (NSA), which monitor worldwide communications. Encyclopedia of Computer Science and Technology Revised Edition by Harry Henderson

3.3 Answer the question below

1) What is the used of linguistic in computer systems?
2) What is applied in software in term of natural language processing?
3) What do language designers have to do with language structure to make programming language?.
4) Why it is important for developers to try to implement a language on different hardware platforms and operating systems?
5) Who is Noam Chomsky? What did he develop?
6) How are grammatical structures created?
7) What are the used of formal grammar rules for computer scientists?
8) What rules of the language processing system must have?
9) What does a natural language "front end" to a database might mean?
10) Why is World Wide Web bringing the world's languages into more pervasive contact?

3.4 Mark true or false the statement below!

1) The field of computational linguistics apply computer systems to research the structure of natural language.
   O True
   O False
2) To create a linguistic software in field of natural language processing doesn't not need to adopt linguistic principles to process written or spoken human language.
   O True
   O False

3) natural language processing includes language translation software, and speech recognition and synthesis.
   O True
   O False
4) It is not necessary for developers to implement a language on different hardware platforms and operating systems.
   O True
   O False
5) The compiler on the new system will make programs reverse to those on the system where the language was first developed.
   O True
   O False
6) Computer scientists need help from linguist in defining programming languages.
   O True
   O False
7) Chomsky construct a concept of formal language in which grammar could be specified as a series of rules built up a level at a time.
   O True
   O False
8) Grammatical structures are constructed by ignoring rules to strings of symbols (words).
   O True
   O False
9) Chomsky believes that transformational generative grammar is universal structure applicable to all human languages.
   O True
   O False
10) Computer scientists could use informal grammar rules to define the valid statements in programming languages.
   O True
   O False
11) The language processing system must have rules that only can handle obvious structure of actual human speech.

O True

O False

12) High-level language statements can be broken down and convert them into low-level instruction codes that can be executed by the CPU.

O True

O False

4. Listening

4.1 Listen to Sultan Issa Hampton talking about computer linguistic Mark True for correct statement and false for incorrect statement.

1. Computational linguistic only deal with morphology. F
   O True
   O False
2. With computational linguistic it will help machine to handle language. T
   O True
   O False
3. Machine observes linguistic such as morphology, syntax to be able to handle language matter. T
   O True
   O False
4. Machine doesn't need to understand morphology and syntax. F
   O True
   O False
5. Evolving model for Computational linguistic is much easier to apply. F
   O True
   O False
6. Handling quantitative data is hard to overcome. T
   O True
   O False
7. text-to-speech software application is practical. T
   O True
   O False

8. text-to-speech app is unable to translate voice command and translate it into text. F
   O True
   O False
9. there is only one model that machine understand how to learn language. F
   O True
   O False
10. it is predicted that machine is able to simulate real human conversation.
   O True
   O False

5. Writing

5.1 Complete the sentences below

1) How the programmer works

   _____

2) he didn't realize that

   _____

3) He didn't know

   _____

4) They now realized that

   _____

5) Carlie's problem was that

   _____

6) Harry's best achievement at school was

   _____

7) Budi's excuse for being late to class

   _____

8) Harry is not the best programmer

   _____

9) Josephine is not responsible for what

_____

10) Allie is the owner of that

_____

11) I don’t know how start the project

_____

12) Sean is starting the coding project

5.2 Translate the sentences below in 15 minutes !

1) When the semester finishes is already written in calendar academic.

_____

2) The instruction book how the tool should be fixed.

_____

3) The warning indicated if the computer would be updating soon.

_____

4) Installed application where I can learn programming.

_____

5) They learn to how to make program that is used in to make application.

_____

6) Why the students have to learn computer linguistic has written in academic curriculum.

_____

7) That the computer scientist has not yet finished is highly expected by the computer users.

_____

8) The computer linguistic will be studied that would help students to be better programmer.

_____

9) He always shares ideas with whoever want to know about computer language.

_____

10) I always ask question about coding that will help me to be better programmer.

_____

6. Key words

6.1 find the synonym and the meaning

English	Synonym	Indonesian
Intertwined, recognition, synthesis, evolve, struggle, unambiguous, confident, confident, precise, struggle, desired, implement, compiler, equivalent, platforms, rigorous, defining, defining, Meanwhile, apply,		

D. BIBLIOGRAPHY

https://tilakkc.com.np/category/post

Henderson Harry, Encyclopedia of Computer Science and Technology Revised Edition, Infobase Publishing, New York, 2003 page 130131

Phillips Deborah, Complete Course for the Toefl Test , Preparation for computer and Paper test, Longman a Pearson Education company, N.Y 2001.