English
Language
Teaching
Centre.

English language support for computer science

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Learning objectives

Writing definitions in computer science

Can you guess which words these definitions refer to?

1. A program that protects your computer from viruses.
2. A set of data which is too large for traditional data processing software.
3. A basic unit of information used in computing.
4. An organised collection of data stored and accessed from a computer system.

Can you guess which words these definitions refer to?

1. A program that protects your computer from viruses. Antivirus software
2. A set of data which is too large for traditional data processing software. Big data
3. A basic unit of information used in computing. Bit
4. An organised collection of data stored and accessed from a computer system. Database

Definitions

word	category	application
Antivirus software	is a program	that protects your computer from viruses.
A bit	is a basic unit	of information used in computing

Writing definitions

The most common way to write a definition in academic writing is to use a *relative clause*.

Use this pattern

Word to be defined + **verb is)** + **category** + ***which/that (or other relative pronoun)*** + characteristics

Writing definitions

The most common way to write a definition in academic writing is to use a *relative clause*.

Use this pattern

Word to be defined + **verb (is)** + **category** + ***which/that (or other relative pronoun)*** + characteristics

Example

A machine **is** **a mechanical structure** ***that*** uses power to apply forces and control movement to perform an intended action.

Relative clauses are a way to combine information and ideas in your writing to make it more concise and academic.

Match the category word with the correct definition

device	procedure	rules and methods	unit	process	branch
Application	sequence				

1. A byte is a _____ of digital information that most commonly consists of eight bits, representing a binary number.

2. Booting is the _____ of starting up a computer or computer appliance until it can be used.

3. Computer architecture is a set of _____that describe the functionality, organization, and implementation of computer systems.

4. Encryption is the _____of encoding information.

5. A router is a networking _____that forwards data packets between computer networks.

6. Robotics is an interdisciplinary _____of engineering and science that designs intelligent machines that can help and assist humans in their day-to-day lives and keep everyone safe.

7. Software engineering is the systematic _____of engineering approaches to the development of software.

8. Object code is a _____ of statements or instructions in a computer language

When you are writing an academic essay or dissertation, you will need to give some definitions of technical terms.

Write definitions of 2 of the words

Algorithm	machine learning	search algorithm	cyber security
Cloud computing	operating system	source code	VPN
Encryption	quantum computer	user interface design	Turing test
Gigabyte	robotics	intranet	

Tell us your definition, but don’t mention the word you are defining.

‘This is a service which provides a secure, encrypted connection between your computer and the internet.’

Defining and non-defining relatives clauses

Alan Turing was a British computer scientist who developed the concept of algorithms.

Alan Turing, whose work has been very influential in the development of artificial intelligence, developed an early model of a computer called a ‘Turing machine’.

Defining and non-defining relatives clauses

Alan Turing was a British computer scientist who developed the concept of algorithms. (identifies or defines the subject)

Alan Turing, whose work has been very influential in the development of artificial intelligence, developed an early model of a computer called a ‘Turing machine’.

(adds extra information about the subject)

Defining Relative Clauses: relative pronouns

Alan Turing was a British computer scientist who developed the concept of algorithms.
subject

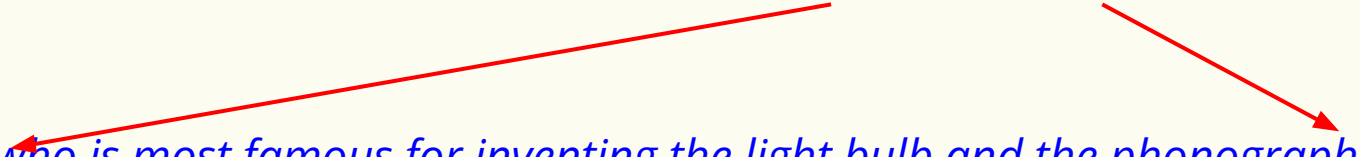
The computer is an invention that we cannot credit to a single inventor.

The computer is an invention we cannot credit to a single inventor.

Relative Clauses

Task 3

A non-defining relative clause MUST have commas before and after the extra information.



Thomas Edison, who is most famous for inventing the light bulb and the phonograph, also invented the talking doll.

Look at the sentences below. If you think the relative clause is defining, don't change the sentence. If you think the relative clause is non-defining, add commas.

1. This is Peter Taylor who works with my sister.
2. People who don't answer e-mails annoy me.
3. My Uncle Sebastian who has always been a bit of a traveller has just gone off to Thailand.
4. The woman who I wanted to see was away on holiday.

Adapted from Murphy, R., (1994) English Grammar in Use, Intermediate Level, 2nd edition, CUP

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4. The woman who I wanted to see was away on holiday.

5. Yesterday we visited the city museum which I'd never been to before.

6. I met a man who knows you from your hometown.

7. The research was inconclusive which meant the hypothesis could not be proven.

8. Mrs Bond is going to spend a few weeks in Sweden where her daughter lives.

9. The name of the hotel where John is staying is 'The Metropol'.

10. The strike at the car factory which lasted 10 days is now over.

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Defining Relative Clauses: relative pronouns

Can you omit the relative pronouns in any of the sentences?

1. The ideas **that** many inventors come up with can appear strange to people **that** aren't inventors.
2. The person **who** invented the ballpoint pen was a Hungarian journalist.
3. There's a new book about Thomas Edison **which** I've read **that** I highly recommend.
4. Guglielmo Marconi was the inventor **who** I think invented the radio.
5. Elias Howe was the inventor **who** created the sewing machine and the zipper.
6. Many men and women **who** we think of as our greatest inventors were considered strange by their colleagues.
7. The light bulb and the phonograph are the inventions **that** Thomas Edison is most famous for.

Grammar Sense 4: Advanced Grammar and Writing by S. K. Bland with A. Savage and P. Mayer (Oxford University Press, 2008)

Defining Relative Clauses: relative pronouns

Task 1

ANSWERS

Can you omit the relative pronouns in any of the sentences?
Cross out the relative pronouns where possible.

1. The ideas **that** many inventors come up with can appear strange to people **that** aren't inventors. - can't omit
2. The person **who** invented the ballpoint pen was a Hungarian journalist.- can't omit
3. There's a new book about Thomas Edison ~~**which**~~ I've read **that** I highly recommend.
4. Guglielmo Marconi was the inventor ~~**who**~~ I think invented the radio.
5. Elias Howe was the inventor **who** created the sewing machine and the zipper. - can't omit
6. Many men and women ~~**who**~~ we think of as our greatest inventors were considered strange by their colleagues.
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Lesson aims:

Consider the importance of a contents page in a dissertation

Analyse some common problems in referencing

Explore writing definitions and complex sentences.

Contents page

Includes titles and page numbers of all sections and subsections. Chapter 1 begins on page 1. Use Roman numerals for all previous pages, e.g.. title page (i), signed declaration (ii) abstract (iii), acknowledgements (iv) and contents (v-?).

It is often best include a separate list of all the figures in the dissertation (figure number, label, page number), and a separate list of all tables in the dissertation (table number, label, page number).

Why do we need a contents page?

2. Contents page

Opening considerations

1. What does the contents page help your reader to see? The organisation of your paper.
2. What does it allow your reader to do? To skip to sections of interest quickly and easily.
3. What is a clear, concise and well-formatted contents page often an indication of? A good paper.

2. Contents page

Elements of a typical master's level dissertation

????? *the main written text*	
1	Title page
2	Abstract
3	Acknowledgements
4	Table of contents
5	List of figures
6	List of tables

????? *the main written text*	
1	Introduction
2	Literature review
3	Methods
4	Results
5	Discussion
6	Conclusion

????? *the main written text*	
1	References
2	Appendices

What are the **three missing words** that group these elements?

2. Contents page

Elements of a typical master's level dissertation.

Before *the main written text*	
1	Title page
2	Abstract
3	Acknowledgements
4	Table of contents
5	List of figures
6	List of tables

Within *the main written text*	
1	Introduction
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- Which of the 3 groups above are **not** normally **numbered** on the contents page?

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Before *the main written text*	
1	Title page
2	Abstract
3	Acknowledgements
4	Table of contents
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Within *the main written text*	
1	Introduction
2	Literature review
3	Methods
4	Results
5	Discussion
6	Conclusion

After *the main written text*	
1	References
2	Appendices

- Which of the 3 groups above are **not** normally **numbered** on the contents page?
  Those **before** and **after** the main written text.

2. Contents page

Elements of a typical master's level dissertation.

Before *the main written text*	
1	Title page
2	Abstract
3	Acknowledgements
4	Table of contents
5	List of figures
6	List of tables
7	Nomenclature

Within *the main written text*	
1	Introduction
2	Literature review
3	Methods
4	Results
5	Discussion
6	Conclusion

After *the main written text*	
1	References
2	Appendices

- Which of the 3 groups above have **Roman numerals** (i, ii, iii,) for page numbers?
  Those **before** the main written text.

Look at 2 examples of dissertation contents pages.

Which one do you prefer?

What are the positive and negative features of each contents page?

https://docs.google.com/document/d/13U_fFOt7KjUQxjvSoFBM_MH1T75KfCaE2RCiXMLeuPI/edit?usp=sharing

References/Bibliography

It is very important to cite all your sources correctly.

If you don’t, you could be guilty of plagiarism.

Your reference list must be in the correct format. Errors in the reference list will make your work look unprofessional.

References/Bibliography

Look at the reference list from a students dissertation.

What is wrong with it?

References

1) AirHelp. (©2019). *AirHelp Score 2019 | Global Airline Rankings*. [online] Available at: https://www.airhelp.com/en-ie/airhelp-score/airline-ranking/ [Accessed 28 Jul. 2019].

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The Harvard referencing style does not use numbers in the bibliography.

What is wrong with this reference list?

References

[1] A. Alameer, P. T. Chiou, and W. G. Halfond, "Efficiently repairing internationalization presentation failures by solving layout constraints," in *Proc. 12th IEEE Int. Conf. Softw. Testing, Verification Validation (ICST)*, 2019, pp. 172–182.

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[5] A. Gloag, E. Rawley, and A. Gloag. "Graphs of Absolute Value Equations." ck12.org. https://www.ck12.org/algebra/graphs-of-absolute-value-equations/lesson/Graphs-of-Absolute-Value-Equations-ALG-I/ (accessed 25 Aug. 2019).

[6] A. N. Tuch, E. E. Presslaber, M. St¨oCklin, K. Opwis, and J. A. Bargas-Avila, "The role of visual complexity and prototypicality regarding first impression of websites: Working towards understanding aesthetic judgments," *Int. J. Human-Comput. Stud.*, vol. 70, pp. 794–811, Nov. 2012.

Referencing

Please use either the Harvard or the IEEE style of referencing. You can find a guide to both these styles on the library pages:

http://www.librarydevelopment.group.shef.ac.uk/referencing.html (ignore the departmental information, look for a guide for one of these references styles).

If you have any questions about referencing, or are unsure about how to reference your work, please discuss this with your project supervisor. It is extremely important to ensure your work is referenced correctly.

Referencing: true or false?

1. Your reference list must be in alphabetical order in the Harvard style.
2. You must give a reference for every source you have cited in your dissertation.
3. You have to give the author’s surname and initials in the reference.
4. You can use images from journals in your work as long as you give a reference.
5. You have to give the page number in a citation in the Harvard style.
6. You need to give the author’s initials in the in-text citation.

Look at the extract from a reference list.

Has the student used academic sources?

9) Crawford, T. (2019). *A Beginner's Guide to User Flows*. [online] Heap | Product and Web Analytics. Available at: https://heap.io/blog/analysis/user-flows-guide [Accessed 18 Aug. 2019].

10) Crestodina, A. (2015). *User Flow Analysis using Google Analytics: Examples for every website owner*. [online] Orbit Media Studios. Available at: https://www.orbitmedia.com/blog/user-flow-google-analytics/ [Accessed 01 Aug. 2019].

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14) Experience UX. (2019). *What is wireframing?*. [online] Available at: https://www.experienceux.co.uk/faqs/what-is-wireframing / [Accessed 01 Aug. 2019].

Academic and non-academic sources

1. Read the list of source types.
2. Decide whether each one is an **academic** or **non-academic** source.

A. Research articles
B. Online encyclopaedia
C. Original documents such as official texts, corporate or legal reports, or historical documents
D. Discipline-specific textbooks
E. Journal articles which review existing work
F. Case studies
G. Conference reports containing original research
H. Newspaper articles and popular magazines

Academic and non-academic sources – answers

1. Read the list of source types.
2. Decide whether each one is an **academic** or **non-academic** source.

In some academic contexts these types of **non-academic** sources are useful for initial background research into a particular topic.

However, they are not generally considered as reliable sources in most disciplines.

A. Research articles
B. Online encyclopaedia
C. Original documents such as official texts, corporate or legal reports, or historical documents
D. Discipline-specific textbooks
E. Journal articles which review existing work
F. Case studies
G. Conference reports containing original research
H. Newspaper articles and popular magazines

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To Discover And Understand.