Algorithm Design and Problem-solving

A-Level Computer Science · Vocabulary in context

Word	Example
computational thinking /ˌkɒmpjuːˈteɪʃənl ˈθɪŋkɪŋ/	**Computational thinking** helps us solve problems step by step.
abstraction /əbˈstrækʃn/	A map uses **abstraction**: it leaves out small details.
decomposition /ˌdiːkɒmpəˈzɪʃn/	**Decomposition** breaks a big problem into small parts.
sub-problem /sʌb ˈprɒbləm/	Each small part of the problem is a **sub-problem**.
procedure /prəˈsiːdʒə/	A **procedure** is a named block of code.
modules /ˈmɒdjuːlz/	Split the program into **modules**.
algorithm /ˈælgərɪðəm/	An **algorithm** is a list of steps to solve a problem.
sequence /ˈsiːkwəns/	In a **sequence**, the steps run one after another.
unambiguous /ʌnæmˈbɪgjuːəs/	Each step must be **unambiguous**: it has only one meaning.
deterministic /dɪˌtɜːmɪˈnɪstɪk/	A **deterministic** algorithm always gives the same output for the same input.
identifier table /aɪˈdentɪfaɪə ˈteɪbl/	The **identifier table** lists each variable and what it is for.
identifier /aɪˈdentɪfaɪə/	Total is the **identifier** of the variable. Total
variable /ˈveərɪəbl/	A **variable** stores a value that can change.

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Word	Example
data type /ˈdeɪtə taɪp/	INTEGER is a **data type**. INTEGER
Boolean /ˈbuːlɪən/	A **Boolean** value is either TRUE or FALSE. TRUE FALSE
pseudocode /ˈsuːdəʊkəʊd/	Write the algorithm in **pseudocode** first.
flowchart /ˈfləʊtʃɑːt/	A **flowchart** shows the steps as boxes and arrows.
selection /sɪˈlekʃn/	An IF statement is a kind of **selection**. IF
iteration /ˌɪtəˈreɪʃn/	A loop is a kind of **iteration**.
loop /luːp/	The **loop** runs ten times.
count-controlled loop /kaʊnt kənˈtrəʊld luːp/	A FOR loop is a **count-controlled loop**. FOR
pre-condition loop /priː kənˈdɪʃn luːp/	A WHILE loop is a **pre-condition loop**. WHILE
post-condition loop /pəʊst kənˈdɪʃn luːp/	A REPEAT loop is a **post-condition loop**. REPEAT
assignment /əˈsaɪnmənt/	Total ← 0 is an **assignment**. Total ← 0
concatenation /kənˌkætəˈneɪʃn/	**Concatenation** joins “Hello” and “World”. ”Hello” ”World”
initialise /ɪˈnɪʃəlaɪz/	**Initialise** the total to 0. 0
counter /ˈkaʊntə/	The **counter** goes up by 1 each time. 1
structured English /ˈstrʌktʃəd ˈɪŋglɪʃ/	**Structured English** writes the steps in short, simple sentences.

Word	Example
stepwise refinement /ˈstepwaɪz rɪˈfaɪnmənt/	**Stepwise refinement** breaks each step into smaller steps.
logic statement /ˈlɒdʒɪk ˈsteɪtmənt/	A **logic statement** is either true or false.
precedence /ˈpresɪdəns/	AND has higher **precedence** than OR. AND OR
De Morgan's law /də ˈmɔːgənz lɔː/	By **De Morgan's law**, NOT (A AND B) is NOT A OR NOT B. NOT (A AND B) NOT A OR NOT B。

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