iGCSE Computer Science – Unit 1	English Name:	Class:
Worksheet: Review, Part 1		©2024 Chris Nielsen – www.nielsenedu.com

1. W	Write the correct vocabulary word next to the box that best describes it. (4)										
	abstraction algorithm constant construct decompose flowchart pseudocode variable										
a)) <i>decompose</i> breaking down a complex problem into smaller, more manageable parts										
b)	constant	a memory location that stores an unchangeable value									
c)	variable	a memory location to store a value that may change while the program is running									
d)	algorithm	a precise method for solving a problem									
e)	construct	a smaller part used as a building block									
f)	pseudocode	a structured, code-like, high-level description of an algorithm									
g)	flowchart	a diagrammatic representation of an algorithm									
h)	abstraction	hiding complexity by focusing on the essential features of a problem									

2. The teacher has a sorted list of names from a class, as shown below. For each stage, write "S" for the start index, "m" for the middle index, and "e" for the end index in order to identify the stages of a *binary search* to find the name "Jackson" in the list. In order to calculate the middle index, use: (start+end) DIV 2. The indices of the array are written above the first stage to help you. (Page 30, question 6) (7)

	0	1	2	3	4	5	6	7	8	9
	Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
a)	S				т					е
	Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
b)						S		т		е
	Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
c)						s, m	е			
	Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
d)							s, m, e			

e) How many times did the algorithm need to compare two names before it was able to find the name "Jackson"?

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2

0	1	2	3	4	5	6	7	8	9
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
S				т					е
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
					S		т		е

f) How many times would the algorithm need to compare two names in order to find the name "Linton"?

0	1	2	3	4	5	6	7	8	9
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
S				m					е
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
					S		т		е
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
					s, m	е			
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
						s, m , e			
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
						е	S		

g) How many time would the algorithm need to compare two names before exiting if the list was searched for the name "Johnson"?

4

0	1	2	3	4	5	6	7	8	9
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
S				т					е
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
					S		т		е
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
								s, m	е
Azikewe	Bloom	Byrne	Davidson	Gateri	Hinton	Jackson	Linton	Smith	Wall
							е	S	

h) How many time would the algorithm need to compare two names before exiting if the list was searched for the name "Nielsen"? *Hint:* the answer is not the same as part (g).

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3. A teacher has stored learner surnames as shown in the first row below. Complete the stages of the bubble sort algorithm when applied to this data. (Page 30, question 5) (5)

Marek	i					
	Jackson	Buchchan	Wilson	Abraham	French	Smith
Jackson	Marek	Buchchan	Wilson	Abraham	French	Smith
Jackson	Buchchan	Marek	Wilson	Abraham	French	Smith
Jackson	Buchchan	Marek	Wilson	Abraham	French	Smith
Jackson	Buchchan	Marek	Abraham	Wilson	French	Smith
Jackson	Buchchan	Marek	Abraham	French	Wilson	Smith
Jackson	Buchchan	Marek	Abraham	French	Smith	Wilson
Buchchan	Jackson	Marek	Abraham	French	Smith	Wilson
Buchchan	Jackson	Marek	Abraham	French	Smith	Wilson
Buchchan	Jackson	Abraham	Marek	French	Smith	Wilson
Buchchan	Jackson	Abraham	French	Marek	Smith	Wilson
Buchchan	Jackson	Abraham	French	Marek	Smith	Wilson
Buchchan	Jackson	Abraham	French	Marek	Smith	Wilson
Buchchan	Abraham	Jackson	French	Marek	Smith	Wilson
Buchchan	Abraham	French	Jackson	Marek	Smith	Wilson
Buchchan	Abraham	French	Jackson	Marek	Smith	Wilson
Abraham	Buchchan	French	Jackson	Marek	Smith	Wilson
Abraham	Buchchan	French	Jackson	Marek	Smith	Wilson
Abraham	Buchchan	French	Jackson	Marek	Smith	Wilson
Abraham	Buchchan	French	Jackson	Marek	Smith	Wilson
Abraham	Buchchan	French	Jackson	Marek	Smith	Wilson
Abraham	Buchchan	French	Jackson	Marek	Smith	Wilson