0 1

The program uses different variables to store single characters or the empty string. The variable identifiers are:

FirstSignal, MenuOption, PlainTextLetter, Signal and Symbol.

Using the variable identifiers listed above, complete **Table 5** by filling in the unshaded cells with the correct variable identifier.

Table 5

Variable identifier	Description
	uncoded letter, part of PlainText
	single unit of Transmission (= or SPACE or EOL)
	first character in Transmission
	used to build SymbolString (. or -)

Copy the contents of all the unshaded cells in **Table 5** into your Electronic Answer Document.

[4 marks]

- **0 2** This question refers to the subroutine ReceiveMorseCode.
- 0 2 . 1 What is the purpose of the variable i in this subroutine?

[2 marks]

Explain what happens when the GetTransmission subroutine is called by the ReceiveMorseCode subroutine and the file to be read contains only spaces. You must include in your explanation how the subroutine ReceiveMorseCode deals with this situation.

[5 marks]

**0 3** This question refers to the subroutine GetNextSymbol.

Give an example of a transmission string that would generate the error message "Non-standard symbol received" and explain how the code will detect the error caused by your string.

[3 marks]

0 4

Morse codes also exist for numerals, so that a text message including numbers can also be transmitted. For example, the Morse code for 3 is:

•••

The program is to be extended to include the Morse code for all numerals from 0 to 9.

Describe the changes that would need to be made to the **Skeleton Program** to achieve this.

In your answer you should discuss the changes that need to be made to the data structures and subroutines.

You are **not** expected to actually make the changes.

[6 marks]

**0 5** The Skeleton Program uses several data structures.

State the identifier of the data structure that stores values of more than one data type.

[1 mark]

This question refers to the subroutines Game and ListPossibleMoves.

Describe what is contained in the parameter PlayersPieces when ListPossibleMoves is called for the first time in the subroutine Game.

[1 mark]

0 7	This question refers to the data structure A defined in the Game subro	utine.
0 7.1	Explain the purpose of each of the first two values stored in row 0 in the structure.	is data
		[2 marks]
0 7.2	Explain why there are 12 rows after row 0 in this data structure.	[1 mark]
0 7.3	Explain the purpose of the values stored in these 12 rows.	[2 marks]
0 8	This question refers to the subroutine ListPossibleMoves.	
	Explain the uses of the variable NumberOfMoves.	[2 marks]

0	9

This question will further change the rules of the game.

When a piece is promoted to a dame, the player who the new dame belongs to now chooses **one** of the opponent's pieces. This piece is removed from the board and the dame is placed in the square the removed piece was in.

0 9 . 1

State the identifier of the data structure that now needs to be passed as a parameter into the subroutine MoveDame.

[1 mark]

# What you need to do:

#### Task 1

Amend the subroutine MoveDame.

This subroutine is to:

- ask the player the piece ID of the opponent's piece they want to remove
- check that the piece is an opponent's piece and is on the board
- remove the opponent's piece
- return the coordinates for the new dame.

### Task 2

Amend the calls to MoveDame from within the subroutine MovePiece.

You will need to amend the parameter list of the subroutine heading of MovePiece and the call to MovePiece from within the subroutine MakeMove.

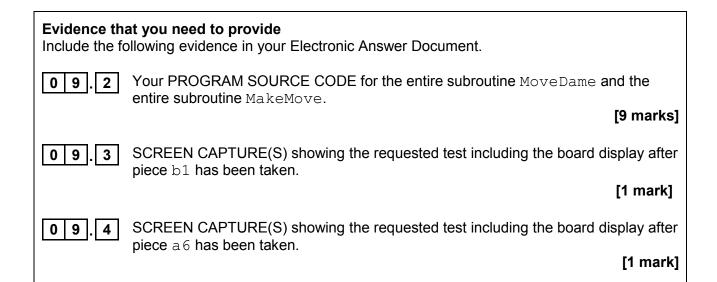
# Task 3

Test that the changes you have made work by conducting the following test:

- run the program
- enter Y
- load game3.txt
- move a2 to row 7, column 0
- take piece b1

### Task 4

- move b5 to row 0, column 3
- take piece a 6



- The Skeleton Program uses a number of data structures.

  State the identifier of the data structure that stores values of more than one data type.

  [1 mark]
- 1 0. State the identifier of a data structure that stores values of **only one data type**. [1 mark]

- State the identifier and data type of a variable in the Skeleton Program that can only represent two different values.

  [2 marks]

  The Skeleton Program uses the data structure Answer.

  State what the second element of this data structure, Answer [1], is used for.

  [1 mark]

  Explain the purpose of the third element of this data structure, Answer [2], and how it is used.

  [3 marks]
  - 1 3 The grid size of the puzzle is currently 9 and sub-grids are 3 x 3.

If the grid size were to be increased to 16, the sub-grids would be 4 x 4 and the hexadecimal digits 0 1 2 3 4 5 6 7 8 9 A B C D E F could be used to solve the puzzle.

Describe **two** changes that would need to be made to the subroutine DisplayGrid to enable this.

You should not make any changes to the **Skeleton Program** to answer this question. [2 marks]

- 1 4 The **Skeleton Program** uses a number of data structures.
- 1 4. 1 State the identifier of a data structure that stores values of more than one data type. [1 mark]
- 1 4.2 State the identifier of a data structure that stores values of **only one data type**. [1 mark]

