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EASTERN CAPE

EDUCATION

**DIRECTORATE SENIOR CURRICULUM MANAGEMENT (SEN-FET)**

**HOME SCHOOLING SELF-STUDY WORKSHEET**

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| **SUBJECT** | INFORMATION TECHNOLOGY THEORY | **GRADE** | 12 | **DATE** | 14 April to 17 April 2020 |
| **TOPIC** | Two Dimensional Arrays – Test/Consolidation activity | **TERM 1****REVISION** | (Please tick) | **TERM 2 CONTENT** | ✓ |
| **TIME ALLOCATION** | 1hr | **TIPS TO KEEP HEALTHY**1. **WASH YOUR HANDS** thoroughly with soap and water for at least 20 seconds. Alternatively, use hand sanitizer with an alcohol content of at least 60%.2. **PRACTISE SOCIAL DISTANCING** – keep a distance of 1m away from other people.3. **PRACTISE GOOD RESPIRATORY HYGIENE**: cough or sneeze into your elbow or tissue and dispose of the tissue immediately after use.4. **TRY NOT TO TOUCH YOUR FACE.** The virus can be transferred from your hands to your nose, mouth and eyes. It can then enter your body and make you sick. 5. **STAY AT HOME.**  |
| **INSTRUCTIONS** | Resources used // This week’s work is taken from the New DBE bookStudy the Chapter 3, Units 1, 2 and 3Attempt all the examples in the bookAnswer the following questions that are extracted from this bookThe Datafiles for the activity are in the week’s data folder |
|  | For this application, open the project here . Once done, save your project in the same folder.A new game called Galaxy Explore is planned and needs to be developed. The purpose of the game is to prepare a grid with a number of randomly placed planets that are not visible to the player. The player must then guess the position of the planets on the grid. The grid will be referred to as the Game board.The GUI below shows an early version of the user interface for the program.

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|  | The program must do the following:● Populate the 2D array when the game starts.● Allow the user to guess the positions of invisibleplanets placed randomly on the game board.● Determine whether the player has won or lost and terminate the game. The player wins when he/she identifies two planets on the game board within five guesses. |

3.1 When the [Start game] button is pressed:a. The [Play] button must be enabled and the rich edit components must be cleared.b. A dash character (-) represents an open space in the aGame and a hash character (#) represents a planet. The 2D array must first be populated with open-space characters.c. The content of the aGame array must be displayed in the game board area.d. The aGame array must be updated to include the appropriate number of planets. The level of difficulty selected from the radio group rgbQ2 determines the number of planets. The following rules apply:● Difficulty level 1: 50 positions in the array must be replaced by planets (#).● Difficulty level 2: 40 positions in the array must be replaced by planets (#).● Difficulty level 3: 30 positions in the array must be replaced by planets (#).

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| e. The value ‘0’ must be displayed on the panel pnlQ2NumberOfGuesses, which indicates the total number of guesses. The image below shows the user interface after the [Start game] button is pressed. |  |

2 When the [Play] button is clicked:a. The player guesses the position of a planet by selecting a row number and a column number from the combo boxes provided.b. If the position of a planet is guessed correctly:● Update the display to show the position of the planet (#) that was guessed correctly.● Update the number of correct guesses on the panel pnlQ2NumberOfGuesses.c. In the aGame array, replace the planet character (#) that was guessed correctly with the “Y” character to show which planets were identified during the game play session. This information is required for the [Reveal Planets] button.d. If the position guessed is NOT the position of a planet, display the row and column values of the incorrect guess in the redQ2Incorrect output area.e. Allow the player to guess the positions of planets repeatedly until he or she wins or loses the game. ● A game is won as soon as the positions of two planets are correctly guessed. ● A game is lost if fewer than two planets are guessed within the allowed five guesses.f. Use a message box to display a suitable message based on the outcome of the game, either ‘Gamewon’ or ‘Game lost’.g. Disable the [Play] button when the game is over. The image below shows the output if the positions oftwo planets were guessed correctly within two guesses:The image below shows the output if the player lost the game. The position of only one planet was guessed correctly within five guesses:3.3 When the [Reveal planets] button is clicked, write code to display the game board with all the randomlyplaced planets revealed. |