**Create PT - Written Response Template**

[**Assessment Overview and Performance Task Directions for Students**](https://apcentral.collegeboard.org/pdf/ap-csp-student-task-directions.pdf)

**3a.** Provide a written response that:

*(Approx. 150 words, for all subparts of 3a combined)*

1. Describes the overall purpose of the program;

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| Countries Explore is a program that helps users learn important facts about countries and territories around the world. The program displays the flag, name, region, population, and GDP per capita of a random country based on the population size users select. |

1. Describes what functionality the video illustrates;

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| The video demonstrates that the program displays a random country each time the user selects a different population size. |

1. Describes the input and output of the program shown in the video

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| The input is the population size name from the dropdown, and the output is the flag, name, region, population, and GDP per capita displayed on the screen. |

**3b.** Capture and paste two program code segments you developed during the administration of this task which contain a list (or other collection type) being used to manage complexity in your program.

*(Approx. 200 words, for all subparts of 3b combined, excluding program code)*

1. The first program code segment must show how data has been stored in the list.

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1. The second program code segment must show the data in the same list being processed, such as creating new data from the existing data or accessing multiple elements in the list, as part of fulfilling the program’s purpose.

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Then, provide a written response that does all three of the following:

1. Identifies the name of the list being processed in this response

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| The name of the list being processed in this response is populations. |

1. Describes what the data contained in the list is representing in your program

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| The populations list contains the population of each country or territory from the “Countries and Territories” dataset as numbers. For example, if the user selects the population size name “Small,” then the flag, name, region, population, and GDP per capita of a random country or territory with a population less than 10,000,000 in the populations list appears on the screen. |

1. Explains how the selected list manages complexity in your program by explaining why your program code could not be written, or how it would be written differently, if you did not use the list

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| The populations list manages complexity by storing every population from the dataset in one list variable that a for loop can traverse with a single set of conditionals. Without the populations list, the program would require an individual number variable for each population from the dataset, increasing the amount of code. The program would then check each variable one at a time, further increasing the amount of code. The populations list would allow the program to continue working if the number of populations in the dataset changes. Each time the program runs, the populations list retrieves all data from the dataset column, and the for loop traverses the entire list. |

**3c.** Capture and paste two program code segments you developed during the administration of this task that contain a student-developed procedure which implements an algorithm used in your program and a call to that procedure.

*(Approx. 200 words, for all subparts of 3c combined, excluding program code)*

1. This first program code segment must be a student-developed procedure that:

* Defines the procedure’s name and return type (if necessary)
* Contains and uses one or more parameters that have an effect on the functionality of the procedure; and
* Implements an algorithm that includes sequencing, selection and iteration.

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1. The second program code segment must show where the student-developed procedure is being called in your program

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Then, provide a written response that does both of the following:

1. Describes in general what the selected procedure does and how it contributes to the overall functionality of the program

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| When the user selects a population size name from the dropdown, the filter function traverses the populations list to find countries or territories that have populations within the population size name interval. The filter function appends the flags, names, regions, populations, and GDP per capitas of those countries or territories to filtered lists. |

1. Explains in detailed steps how the algorithm implemented in the selected procedure accomplishes its task. Your explanation must be detailed enough for someone else to recreate it.

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| The filter function has a parameter popName which takes String input from the population size dropdown as the argument (line 21). The function clears the filtered lists filteredFlags, filteredNames, filteredRegions, filteredPopulations, and filteredCapitaGDPs so that the stored data from the previous call will not affect the current output (lines 24-28). A for loop traverses the populations list (lines 30-56). Within the for loop, a set of conditionals checks if the population size of the country at the current index is within the interval of the population size name. When the if statement with the conditional if popName is “Small” and the population size at the current index is less than 10,000,000 is true, the filter function appends the data of the country at that index to the filtered lists (lines 32-39). When the else if statement with the conditional if popName is “Medium” and the population size at the current index is at least 10,000,000 and less than 100,000,000 is true, the filter function appends the data of the country at that index to the filtered lists (lines 40-47). When the else if statement with the conditional if popName is “Large” and the population size at the current index is at least 100,000,000 is true, the filter function appends the data of the country at that index to the filtered lists (lines 48-55). |

**3d.** Provide a written response that does all three of the following:

*(Approx. 200 words, for all subparts of 3d combined, excluding program code)*

1. Describes two calls to the selected procedure identified in written response 3c. Each call must pass different arguments that cause a different segment of code in the algorithm to execute;

First call:

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| The user selects “Medium” from the population size dropdown. The resulting function call is filter(“Medium”). |

Second call:

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| The user selects “Large” from the population size dropdown. The resulting function call is filter(“Large”). |

1. Describes what condition(s) is being tested by each call to the procedure

Condition(s) tested by the first call:

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| The argument “Medium” fails the conditional if popName is “Small” in the if statement at lines 32-39. The argument “Medium” passes the conditional if popName is “Medium” in the else if statement at lines 40-47. If the population size at the current index is at least 10,000,000 and less than 100,000,000 as well, the code segment within this else if statement executes. The argument “Medium” fails the conditional if popName is “Large” in the else if statement at lines 48-55. |

Condition(s) tested by the second call:

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| The argument “Large” fails the conditional if popName is “Small” in the if statement at lines 32-39. The argument “Large” fails the conditional if popName is “Medium” in the else if statement at lines 40-47. The argument “Large” passes the conditional if popName is “Large” in the else if statement at lines 48-55. If the population size at the current index is at least 100,000,000 as well, the code segment within this else if statement executes. |

1. Identifies the result of each call.

Result of the first call:

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| After the for loop traverses the populations list, the filter function will have appended the flag, name, region, population, and GDP per capita of each country or territory with a population of at least 10,000,000 and less than 100,000,000 to the filtered lists. |

Result of the second call:

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| After the for loop traverses the populations list, the filter function will have appended the flag, name, region, population, and GDP per capita of each country or territory with a population of at least 100,000,000 to the filtered lists. |