**Documentation**

1. **Problem Statement:**

A data analyst Ms. Simran is working on information collected by a mobile service provider MARiO on data usage on monthly basis since 2016. The information collected is in the form of Matrix (Y axis - Total data downloaded in GB vs X axis - Month of the year). She is tasked to present a cumulative (successive additions) figure of data downloaded for each month in a year for the last two years i.e., 2017 and 2018. Implement the above using CPU OS simulator based assembly language program.

1. **Team**

Batch: S1-18\_DSEABZG516. Bangalore

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| **Sl. No.** | **Name** | **ID NO** |
| 1 | Pamidi Pradeep Kumar | 2018AB04152 |
| 2 | Bhagabat Prasad Bhuyan | 2018AB04161 |
| 3 | Amit Agarwala | 2018AB04177 |

1. **Description of solution provided:**

*This section should specify the addressing mode used for main data storage and access, various functions used and their description. For Example: Sort the data in the given array in ascending order.*

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| **Sl No** | **Name of the data** | **Addressing mode used** |
| 1 | **Input:**  1. Number of Years of data: Stored in address 0000  2. Name of the year (eg: 2017): Stored in address 0003-005.  3. 12 month data for the first year: 0006 to 0041  4. Name of the second year: 0042 to 0045  5. 12 month data for the second year: 0045 to 0081  (.. and so on for the number of years entered) | Register Indirect addressing mode.  The Register **R03** is used to track the address. |
| *2* | **Output:**  Output matrix is stored from address: 0081 to 0156  First year data: 0081 to 0119  Second year data: 0120 to 0156 | Register Indirect addressing mode.  The Register **R03** is used to track the address. |
| **Sl No** | **Name of the function** | **Description** |
|  | *The program was written with code segments and not as separate functions. The major code blocks (labelled in the program too) are:*  *1. Accept user input*  *A. Accept number of Years*  *B. Accept input for each of the year. Year number and 12 month data for each year.*  *2. Core business logic*  *3. Display results to the user* |  |

*Note: In program, the function name should be used as target address during function call*

1. **Procedure:**

An additional document attached (**S1-18\_DSEABZG516\_ProgramDetails.pdf**) contains the procedure explained in detail. A separate document has been attached as it has a landscape format unlike this document and was found to be better for representing the procedure.

Link to the youtube video to see the running program: **https://youtu.be/3oDOqxFIyyo**

**Key highlights of the program:**

1. This program is designed to be flexible to work with any number of years of data.

2. This program accepts input from the keyboard in a user friendly manner.

3. This program outputs the data to the screen and saves the results to the memory too.

4. This program is **self-contained**. All the information, strings and I/O code are within the program itself and doesn’t require any pre-memory data placement.

1. **Contribution** (This should contain the list of all the students and their contribution)

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| **Sl. No.** | **Name** | **ID NO** | **Contribution** |
| **1** | Pamidi Pradeep Kumar | 2018AB04152 | Program design, coding, testing, video and documentation |
| **2** | Bhagabat Prasad Bhuyan | 2018AB04161 | Code assistance, review and testing |
| **3** | Amit Agarwala | 2018AB04177 | Drop out. |