|  |  |
| --- | --- |
|  | **K. K. Wagh Polytechnic, Nashik.**  HirabaiHaridasVidyanagari, Amrutdham, Panchavati,Nashik-422003  **Department of Computer Technology** |

**Proposal for Micro-Project** Institute Code: 0078

Academic Year: 2022-23 Program: Computer Technology

Course: Microprocessors (MIC) Course Code: 22415 Scheme: I

Semester: 4 Class: SYCM-I Date of Proposal: 22/02/2023

**Title of Micro-Project: Write an ALP to write a procedure for performing Basic Arithmetic operations**

**Problem Definition:** The objective of this project is to create a modular procedure in 8086 assembly language to perform basic arithmetic operations like addition, subtraction, multiplication, division,square,cube and factorial, without taking input from the user. The procedure will be optimized for maximum efficiency and accuracy, and the result will be stored in a register or memory location as defined in the code. The program will include appropriate comments and documentation for future reference and can be used in other programs by simply calling it. The ultimate goal is to create a versatile and efficient procedure for basic arithmetic operations.

1. **Aim/Objectives/ Benefits of the Micro-Project:**

The Aim/Objectives of the Micro-project is:

* To develop an understanding of assembly language programming and its applications in performing basic arithmetic operations.
* To implement an ALP that can perform operations such as addition, subtraction, multiplication, and division of two numbers.also find square,cube and factorial
* To optimize the ALP to improve the performance and efficiency of arithmetic operations.
* To test and debug the ALP to ensure accurate and reliable results.
* To document the ALP code and provide instructions for its use and modification.
* To explore the potential of the ALP in solving practical problems that require arithmetic operations, such as data processing and scientific calculations.
* To evaluate the limitations and challenges of using assembly language programming for arithmetic operations and compare it with other programming languages.

**2.0 Course Outcomes addressed (COs):**

CO.1: Write assembly language program for the given problem.

CO.2: Develop an assembly language program using assembler.

CO.3: Develop assembly language programs using procedures, macros and modular programming approach.

3.**0 Proposed Methodology:**

1. Discussing on various topics and finalized one topic of ALP to write a procedure for performing Basic Arithmetic operations
2. Identify the specific arithmetic operations to be performed, such as addition, subtraction, multiplication, or division. also square,cube and factorial
3. Choose an appropriate assembly language and IDE (Integrated Development Environment) for writing and testing the ALP, such as MS-DOS,TASM,TLINK,TD.
4. Write the ALP code using the appropriate assembly language syntax and instructions to perform the chosen arithmetic operations.
5. Test the ALP code by inputting different sets of data and verifying that the output matches the expected results for each arithmetic operation.
6. Optimize the ALP code for efficiency and speed by reducing the number of instructions and minimizing memory usage.
7. Document the ALP code and its functionality, including input and output formats, data types, and any limitations or constraints.
8. Validate the ALP code by comparing it with existing solutions and verifying that it meets the requirements and specifications of the project.
9. Iterate and refine the ALP code as needed based on feedback and testing results.
10. Testing all the modules and making corrections as per guidelines suggested by Guide.
11. Finalised all modules of ALP to to perform basic operations.
12. Generated Final Output.

**4.0 Action Plan:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Details of activity** | **Planned Start date** | **Planned Finish date** | **Name of ResponsibleTeam Members** |
|  | Searching & finalizing microproject topic. | 06/02/2023 | 13/02/2023 | All members |
|  | Preparing algorithm and flowchart. | 13/02/2023 | 20/02/2023 | All members |
|  | Preparing a micro project proposal | 20/02/2023 | 27/02/2023 | All members |
|  | Coding in ALP to perform basic Arithmetic Operations. | 27/02/2023 | 13/03/2023 | All members |
|  | Testing of all modules and doing corrections if any. | 13/03/2023 | 20/03/2023 | All members |
|  | Preparing a final brief report using MS word. | 20/03/2023 | 10/04/2023 | All members |
|  | Presentation & Viva of micro project | 17/04/2023 | 24/04/2023 | All members |

**5.0 Resources Required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **Name of Resource/material** | **Specifications** | **Qty** | **Remarks** |
|  | Laptop | HP Elitebook 830 g3-Intel(R) Core(TM) i5, 8 GB installed RAM,SSD-256 GB,HDD-1TB | 01 | For project work |
|  | Operating System | Windows 11 Pro x64 bit | 01 | For running ALP Tools |
|  | Editor | MS-DOS :-1.4v | 01 | For Editing and Making Changes of ALP |
|  | Assembler | TASM :-1.4v | 01 | For converting ALP to MLL |
|  | Linker | TLINK :-2.0v | 01 | For linking different object files |
|  | Debugger | TD :-2.0v | 01 | For finding and fix errors |
|  | Other software | Microsoft Office Word | 01 | For documentation |
|  | Reference book: | The 8088 & 8086 Microprocessor | 01 | For studying MIC concepts |
|  | Websites | www.geeksforgeeks.org  www.studytonight.com  www.tutorialspoint.com | 03 | For referring sample ALP & concept |

**Name of Team Members:**

|  |  |  |  |
| --- | --- | --- | --- |
| Enrolment No. | Roll No. | Name of Students | Signature |
| 2100780077 | 06 | Baldota Kalash Sachin |  |
| 2100780081 | 10 | Bhalerao Mukunda Chandrashekhar |  |
| 2100780086 | 15 | Dhakane Aditya Arun |  |

Date: 22/02/2023 Evaluated by: Signature of Guide: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name of Guide: Ms. P.A.Agrawal