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Annexure I

Micro Project Proposal

ALP FOR ASCENDING AND DESCENDING

1. Aims/Benefits of the Micro-Project:

- Assembly language program for ascending and descending order.
- This will help in arranging data in ascending of descending manner.
- Logic for ascending descending will understood and instructions will also understood.
- Applying the knowledge that we got in subject to create project.

2. Course Outcome Addressed:

- CO-1: Write assembly language program for given problem.
- CO-2: Use instructions for different addressing modes.
- CO-3:Develop assembly language program using assembler.

3. Proposed Methodology:

An assembly language is type of low-level programming language that intended to communicate directly with computer hardware. All the knowledge of instructions, assembly programing, assembler and working that we got in this microprocessor subject is applied for developing assembly language program for the ascending and descending order.

4. Action Plan:

Sr. No.	Details of Activity	Planned Start date	Planned Finish date	Name of Responsible Team Members
1	Search the information of Topic	10-02-2023 2:00 – 3:00 PM	11-02-2023 2:00 – 3:00 PM	Kunal Nitin Nalwade
2	Collecting information and creating algorithm	17-02-2023 2:00 – 3:00 PM	03-03-2023 2:00 – 3:00 PM	Akshay Dashrath Gitte
3	Analysis of data and flowchart	04-03-2023 2:00 – 3:00 PM	10-03-2023 2:00 – 3:00 PM	Harsh Moreshwar kale
4	Creating format of project	11-03-2023 2:00 – 3:00 PM	17-03-2023 2:00 – 3:00 PM	Kunal Nitin Nalwade
5	Program writing and execution	18-03-2023 2:00 – 3:00 PM	25-03-2023 2:00 – 3:00 PM	Harsh Moreshwar kale
6	Detailing the project	31-03-2023 2:00 – 3:00 PM	01-04-2023 2:00 – 3:00 PM	Akshay Dashrath Gitte
7	Overview of the project	07-04-2023 2:00 – 3:00 PM	08-04-2023 2:00 – 3:00 PM	Akshay Dashrath Gitte
8	Final report of project	15-04-2023 2:00 – 3:00 PM	21-04-2023 2:00 – 3:00 PM	Kunal Nitin Nalwade

5. Resources Required:

Sr. No.	Name of resource / material	Specification	Quantity	Remarks
1	Computer	WINDOWS 11,8GB RAM	1	
2	Operating System	WINDOWS 11	1	
3	Browser	Google Chrome	1	
4	software	TASM	1	

6. Names of Team Members with Roll No.'s:

Sr. No.	Enrollment No.	Name of Team Member	Roll No.
1	2110950049	Akshay Dashrath Gitte	01
2	2110950051	Harsh Moreshwar Kale	03
3	2110950099	Kunal Nitin Nalwade	49

Mr.Lokare A.P.

Name and Signature of the Teacher

Annexure – II

Micro Project Report

ALP FOR ASCENDING AND DESCENDING

1. Rationale:

An assembly language is type of low-level programming language that intended to communicate directly with computer hardware. Using assembly language program for ascending and descending will be developed.

2. Aims/Benefits of the Micro-Project:

- Assembly language program for ascending and descending order.
- This will help in arranging data in ascending of descending manner.
- Logic for ascending descending will understood and instructions will also understood.
- Applying the knowledge that we got in subject to create project.

2. Course Outcomes Achieved:

- CO-1: Write assembly language program for given problem.
- CO-2: Use instructions for different addressing modes.
- CO-3:Develop assembly language program using assembler.

4.Literature Review:

Ascending logic with example:

Pass-1:
F9 F2 39 05
F2 F9 39 05
F2 39 F9 05
F2 39 05 F9 (1 number got fix)
Pass-2:
F2 39 05 F9
39 F2 05 F9
39 05 F2 F9 (2 number got fix)
Pass-3:
39 05 F2 F9
05 39 F2 F9 (sorted)

Descending logic with example

Pass-1: 32 05 14 50
32 05 14 50
32 14 05 50
32 14 50 **05** (1 number got fix)

Pass-2: 32 14 50 05
`32 14 50 05`
`32 50 14 05 (2 number got fix)`

Pass-3: 32 50 14 05
50 32 14 05 (sorted)

5.Actual Methodology followed

5.1 Algorithm:-

1)Ascending order:

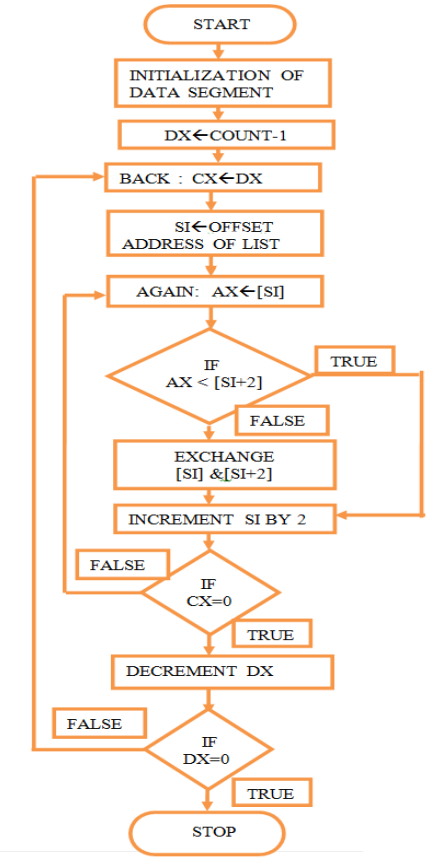
1. Load data from offset 500 to register CL (for count).
2. Travel from starting memory location to last and compare two numbers if first number is greater than second number then swap them.
3. First pass fix the position for last number.
4. Decrease the count by 1.
5. Again travel from starting memory location to (last-1, by help of count) and compare two numbers if first number is greater than second number then swap them.
6. Second pass fix the position for last two numbers.
7. Repeated.

2)Descending order:

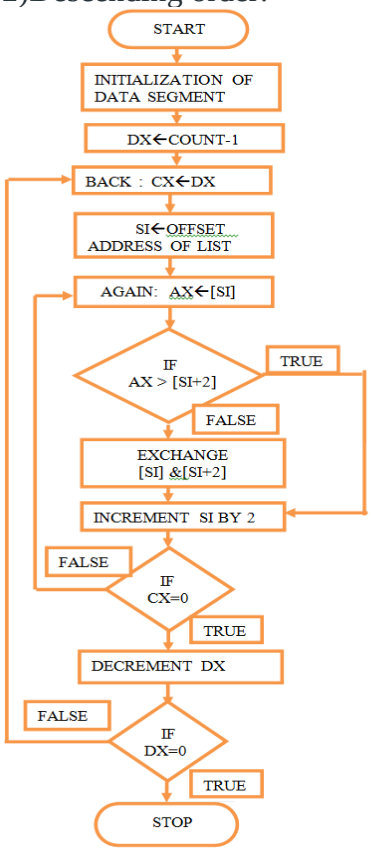
1. Load data from offset 500 to register CL (for count).
2. Travel from starting memory location to last and compare two numbers if first number is smaller than second number then swap them.
3. First pass fix the position for last number.
4. Decrease the count by 1.
5. Again travel from starting memory location to (last-1, by help of count) and compare two numbers if first number is smaller than second number then swap them.
6. Second pass fix the position for last two numbers.
7. Repeat.

5.2 flowchart:

1)Ascending order:



2)Descending order:



5.3 Program:

1)Ascending order:

```
ASSUME CS : CODE, DS : DATA
DATA SEGMENT
LIST DW 05H, 04H, 01H, 03H, 02H
COUNT EQU 05H
DATA ENDS

CODE SEGMENT
START: MOV AX, DATA
MOV DS, AX
MOV DX, COUNT - 1
BACK : MOV CX, DX
MOV SI,OFFSET LIST
AGAIN : MOV AX, [SI]
CMP AX, [SI + 2]
JC GO
XCHG AX, [SI + 2]
XCHG AX, [SI]
GO:INC SI
INC SI
LOOP AGAIN
DEC DX
JNZ BACK
HLT
CODE ENDS
END START
```

2)Descending order:

```
ASSUME CS : CODE, DS : DATA
DATA SEGMENT
LIST DW 03H, 04H, 01H, 05H, 02H
COUNT EQU 05H
DATA ENDS
CODE SEGMENT
START: MOV AX, DATA
MOV DS, AX
MOV DX, COUNT - 1
BACK : MOV CX, DX
MOV SI, OFFSET LIST
AGAIN : MOV AX, [SI]
CMP AX, [SI + 2]
JNC GO
XCHG AX, [SI + 2]
XCHG AX, [SI]
GO:INC SI
INC SI
LOOP AGAIN
DEC DX
JNZ BACK
HLT
CODE ENDS
END START
```

6.Actual Resources Used:

Sr. No.	Name of resource /material	Specification	Quantity	Remarks
1	Computer	WINDOWS 11,8 GB RAM	1	
2	Operating System	WINDOWS 11	1	
3	Browser	Google Chrome	1	
4	software	TASM	1	

7.Outputs of Micro-Projects:

8. Skill developed / Learning out of this Micro-Project:

- Some more knowledge of assembly language programing added.
- More instructions get to know.
- Logical thinking way increased.
- How assembly language work on computer hardware is now understand.
- Memory addressing and increment decrement is understood.

9. Applications of this Micro-Project:

- Sorting array in ascending and descending order.
- Sorting of data in ascending and descending order.
- Efficient way for searching data achieved by ascending and descending order.