|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CHAROTAR UNIVERSITY OF SCIENCE AND TECHNOLOGY**  **CHANDUBHAI S PATEL INSTITUTE OF TECHNOLOGY**  U & P U Patel Department of Computer Engineering | | | | | |
| **Subject code** | **:** | CE341 | **Semester** | **:** | 5 |
| **Subject name** | **:** | Microprocessor Architecture and  Assembly Language Programming | **Academic year** | **:** | 2020-21 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Sr. No.** | **Aim** | **Hrs.** | **CO** |
| **Laboratory - 1** | | **02** |  |
|  | Write an assembly program to perform Addition, Subtraction, Multiplication, Division of:   1. two 8-bit numbers 2. two 16-bit numbers   Note : get the data form registers, result should be available in register |  |  |
| **Laboratory - 2** | | **02** |  |
|  | Write an assembly program to perform Addition, Subtraction of :   1. two 8-bit numbers 2. two 16-bit numbers 3. two 32-bit numbers 4. two 64-bit numbers   Note : get the data form memory locations, result should be available at memory location |  |  |
| **Laboratory - 3** | | **02** |  |
|  | Write an assembly program for below given fragments of C program   1. void main()   {  int l,m,n,o,p;  l = m+n-o+p;  }   1. C = ( F – 32 ) \* 5 / 9 |  |  |
| **Laboratory - 4** | |  |  |
|  | Write an assembly program to exchange values of two variables. (use xchg) |  |  |
|  | Write an assembly program to perform following logical operations on two variables A & B and save each result in separate variable.   1. A B 2. A B 3. A B 4. ~ A   Also check the result of A test B and compare its result with above operations. |  |  |
|  | Write an assembly program to perform following operations on variable A and save each result in separate variable. Also analyze the results.   1. Logical left shift 2. Logical right shift 3. Arithmetic left shift 4. Arithmetic right shift 5. Rorate left with carry 6. Rorate left without carry 7. Rorate right with carry 8. Rorate right without carry |  |  |
| **Laboratory - 5** | | **02** |  |
|  | Write a program to multiply & divide the number stored at 4000H by 2 and store the result at 4001H & 4002H. (without MUL and DIV instruction) |  |  |
|  | Write a Program to subtract the contents of memory location 4001H from the memory location 4002H and place the result in memory location 4003H. (without SUB instruction). |  |  |
| **Laboratory - 6** | | **02** |  |
|  | Write an assembly program to set lower byte of flag register. |  |  |
|  | Write an assembly program to add the two 16-bit numbers form memory location and to store the sum and flag status at memory locations. |  |  |
|  | Write an assembly program to set higher 4-bits out of 8-bits of content of the memory location to 0. |  |  |
| **Laboratory - 7** | | **02** |  |
|  | Write an assembly program to perform ASCII adjust of result of addition, subtraction, multiplication and division. Also analyze the result before and after the adjustment. |  |  |
|  | Write an assembly program to perform decimal adjust of result of addition and subtraction. Also analyze the result before and after the adjustment. |  |  |
|  | Write an assembly program to check given number is even or odd. Also print appropriate message on console. |  |  |
| **Laboratory - 8** | | **02** |  |
|  | Write an assembly program to print string in reverse order. |  |  |
|  | Write an assembly program which converts upper case to lower and vice versa for a given string. |  |  |
| **Laboratory - 9** | | **02** |  |
|  | Write an assembly program to create two data series as mentioned below. Calculate the sum of all elements in each of them and save them in respective variables. Also display both answers on console.   1. Data series of byte type data 2. Data series of word type data |  |  |
|  | Write an assembly code to create a byte type data series and find the maximum, minimum, median and mean value of it. Save all answer in separate variable. |  |  |
| **Laboratory - 10** | | **02** |  |
|  | Write an assembly code to copy string. (using jump, loop and string manipulation instruction) |  |  |
|  | Write an assembly code to compare two strings. Print appropriate message “same” or “not same” on output string. |  |  |
| **Laboratory - 11** | | **02** |  |
|  | Write an assembly program to check given number is prime or not. Display ‘1’ on output screen if number is prime, display ‘0’ otherwise. |  |  |
|  | Write an assembly program to get the answer of below given series.  1! + 2! + 3! + … + n! |  |  |
| **Laboratory - 12** | | **02** |  |
|  | Write an assembly code to find cube of given variable. The program should have two subroutines: S (find number square) and C (find number cube). Main program should call for C and C should call for S to complete given task. |  |  |
|  | Write an assembly code to arrange elements of a vector in descending order. The program must have subroutine to perform sorting task. |  |  |
| **Laboratory - 13** | | **02** |  |
|  | Write an assembly language program to fill the memory locations starting from 3000h, with n Fibonacci numbers. |  |  |
|  | Write an assembly program to read a list of n numbers and generate to separate list of even numbers and odd numbers at memory locations 3000h and 4000h memory locations respectively. |  |  |
| **Laboratory - 14** | | **02** |  |
|  | Write an assembly language program to Display Digits 0 1 2 3 4 5 6 7 8 9 A B C D E F on output screen with 1 second of delay between each number print. |  |  |
|  | Write an assembly language program to perform addition of two variables a and b using MACRO. |  |  |