National University of Computer and Emerging Sciences

Laboratory Manual

for

Computer Organization and Assembly Language Programming

Course Instructor	Aleena Ahmed
Lab Instructor	Sana Ejaz
Semester	Fall 2024

Department of Computer Science

FAST-NU, Lahore, Pakistan

OBJECTIVES:

- Understand the purpose and functionality of software interrupts.
- Learn how to use different software interrupts for input/output operations.
- Gain hands-on experience with common DOS interrupts to manipulate hardware and software resources.

Instructions:

1. **Submit work in a single Word file with screenshots of meaningful results.**
2. **Make proper subroutines**
3. **Use Delay Function (if required)**

Task 1: Create a program that takes a single key input from the user using INT 16h and then displays the ASCII code of the entered key using INT 21h.

Steps:

1. Use `INT 16h` with `AH = 00h` to wait for and capture a keystroke.
2. Store the ASCII value of the keystroke in a register.
3. Use `INT 21h` to display the ASCII value back to the user in numeric form.
4. Ensure the program waits for the user to press a key before displaying the output.

Task 2: Write an assembly program that creates a text file, writes a message into it, and then closes the file using INT 21h.

Steps:

1. Use `INT 21h` with `AH = 3Ch` to create a new file. Specify the file name and attribute.
2. Use `AH = 40h` to write a short message into the file.
3. Close the file with `AH = 3Eh` to ensure data is saved.
4. Optionally, add code to reopen the file and display its contents as confirmation.

Task 3: Write an assembly language program that takes a message from the user using INT 21h and then displays the message on the screen. Experiment with different function calls for printing the string.

Steps:

1. Use `INT 21h` with function `0Ah` to capture a string input from the user.
2. Use the `09h` function to display the string on the screen.
3. Allow the user to enter a custom message, and ensure it is displayed back to them.