ICP MAJOR PROJECT

Semester- II

Abstract

Applied array manipulation, string processing, bitwise operators, and loops to enhance computational efficiency and problem-solving in diverse scenarios.

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Description: Array Rotation by Bitwise Operation

Objective:

This project aims to implement a program that rotates a set of four integers within an array to the right by 2 bits. The rotation involves bitwise operations and requires printing the original and resulting array in both integer and binary string forms.

Procedure:

Define an array with four successive memory locations for integers.

Implement a rotation mechanism using bitwise operations to shift the integers to the right by 2 bits.

Print the original and rotated arrays in both integer and binary string forms.

Utilize a library method to convert integers to binary strings for clear visualization.

Implementation Steps:

Initialize an array with four integers.

Implement a bitwise rotation operation for the array elements.

Create a method to print the original and rotated arrays in both integer and binary string formats.

Utilize a library method to convert integers to binary strings.

Display the results to demonstrate the rotation effect.

OUTPUT

```
--------------------Original Array--------------------
10 11 12 13

------Original array showing 32 bits binary-------
00000000000000000000000000001010
00000000000000000000000000001011
00000000000000000000000000001100
00000000000000000000000000001101

---After rotation array showing 32 bits binary---
01000000000000000000000000000010
10000000000000000000000000000010
11000000000000000000000000000011
00000000000000000000000000000011

----------------After rotation array----------------
1073741826  -2147483646  -1073741821  3
```

Description: Decimal to Any Base Converter

Objective:

The Java program aims to convert a decimal integer (n) to a target value (n') with a specified base (b). The result is presented as a string, allowing for the inclusion of alphabets and digits in the target value.

convertToAnyBase Method:

This method takes two parameters: n (decimal number) and b (base).

It performs the conversion from decimal to the target base and returns the result as a string.

The method uses a StringBuilder to build the result in reverse order to ensure the correct representation of the converted value.

main Method:

The main method demonstrates the usage of the convertToAnyBase method by providing a sample decimal number (decimalNumber) and a base (base).

It prints both the original decimal number and the result of the conversion in the specified base.

Usage:

Replace the values of decimalNumber and base in the main method with the desired inputs.

Run the program to observe the conversion of the decimal number to the corresponding value in the target base.

OUTPUT

Decimal to Binary

Enter decimal integer: 786

Enter base value:2

The binary value of 786 is: 1100010010

Decimal to Octal

Enter decimal integer: 57

Enter base value:8

The octal value of 57 is: 71

Decimal to Hexadecimal

Enter decimal integer: 572

Enter base value:16

The hexadecimal value of 572 is: 23C