**Assignment of Data Structure and Algorithms**

**Week- 1:**

#Pseudocode for finding duplicate values in an array.

1. Start
2. Data originalarray as array of whole numbers
3. Data duplicatearray[size of originalarray] as array of whole numbers
4. Data temp, x=0, y=x+1
5. for loop until x is less than size of originalarray

temp=originalarray[x]

for loop until y is less than size of originalarray

if temp=originalarray[x+1]

OUTPUT temp

y++

next loop

x++

next loop

1. END

**Week- 2:**

#Pseudocode for adding two polynomials containing degree of coefficients

1. Start
2. Data first and second as an array of whole numbers containing degree of coefficients
3. Data i as whole number
4. first= {5, 8, 2, 11}
5. second= {9, 3, 12, 4}
6. Data Sum as an array of whole numbers containing degree of coefficients
7. for loop until i is less than size of first

Sum[i]=first[i]+second[i]

i++  
next loop

1. output Sum
2. End

#Pseudocode for determining whether a given word is palindrome or not and its time complexity.

//main

1. start
2. Data word as string
3. Output “Give a word”
4. Input word
5. If Palindrome(word) == True then
6. Output “The given word is palindrome”
7. else
8. Output “The given word isn’t palindrome”

//Function

1. Palindrome (String str)
2. Data i, j as integer
3. i = 0
4. j = size of str
5. While (i is less than j)

If (str[i] is not equal to str[j])

return False

i++

j--

else

return True

Endif

1. End Function

The time complexity of this program is O(n).

**Week- 3:**

#The time complexity of the recursive version of linear search on an array of integers

The time complexity of this program is O(n).