	PUNE INSTITUTE OF COMPUTER TECHNOLOGY PUNE - 411043	
	Department of Electronics & Telecommunication	
	ASSESMENT YEAR: 2020-2021	CLASS: SE 5
	SUBJECT: DATA STRUCTURES	
EXPT No: 1	LAB Ref: SE/2020-21/	Starting date: 13/10/2020
	Roll No:22119	Submission date: 09/11/2020
Title:	String operations (Using library and user defined function)	
Prerequisites:	• Dev c++ ide	
	• Knowledge about strings.	
Objectives:	To perform operations on string such that:	
	1) Finding substring	
	2) Checking palindrome condition	
	3) String Comparison	
	4) Copying a string	
	5) Reverse a string	
Theory:	Strings are defined as an array of characters. The difference between a character and a string is that string is terminated with a special character '\0' DECLARATION OF STRING- Declaring a string is as simple as declaring a one-dimensional array. Below is the basic syntax for declaring a string. Char str[100]; In the above syntax str is any name given to the string variable and size is user defined length of the string, i.e. the number of characters string will store. Initializing a string: A string can be initialized in different ways. Char str[100]= "hello" SUBSTRING OPERATIONS- C substring program to find substring of a string and its all strings. A substring itself is a string that is part of a longer string. For example, substring of string "the" are t, th, the, he, h, e. the header file "string.h" does not contain any library function to find a substring directly. Example- the string is given by: char str[100]= "hello" then char substr= "ello" can be called as the substring of str. PALINDROME OF A STRING- A string is said to be palindrome if reverse of the string is same as the original string.	

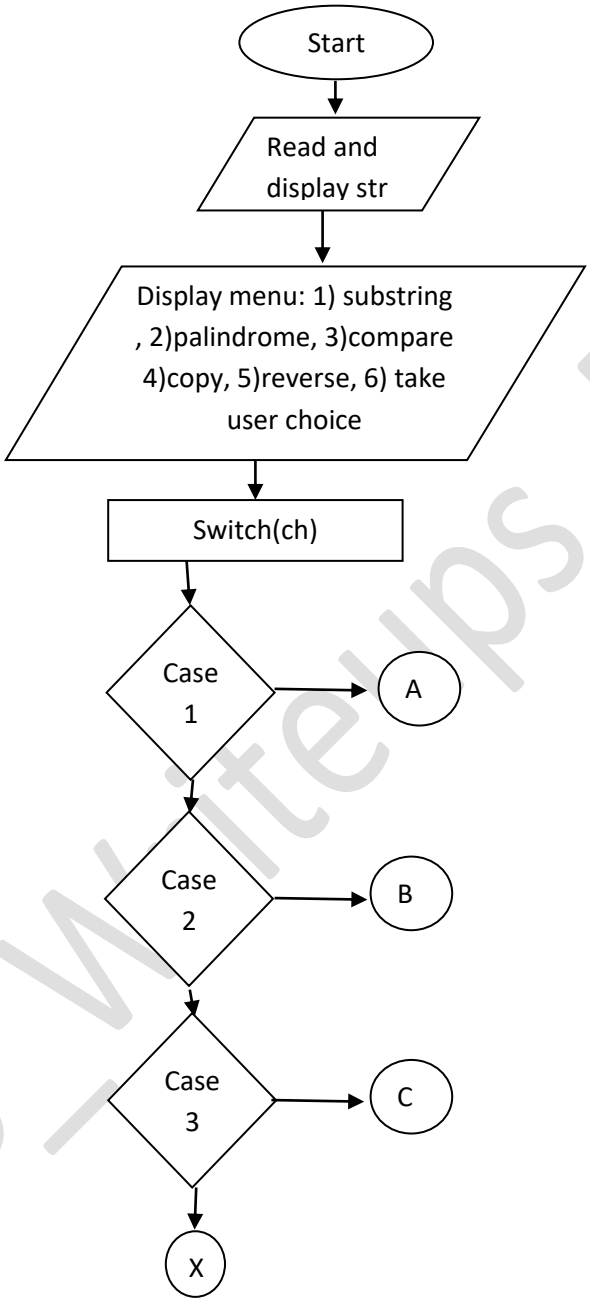
	For example, “abba” is palindrome but “abbc” is not palindrome. COMPARISON OF STRING- To compare two strings the strings should be of same size. The strings are compared according to their ascii values. Input: s1= “hello”; s2= “hi” output: Unequal strings Input: s1= “hello”; s2= “hello” output: Equal strings COPY A STRING- copy is used to copy the content of the first string to another string REVERSE OF STRING- The reverse of string is to print a given string from backward Example: char str[100]= “hello” char revstr[100]= “olleh”
Algorithm	**Algorithm for substring:** 1. Start. 2. Initialize i, j and flag as 0. 3. Get two strings a and b from user. 4. If a[i] is equal to b[j], increment I and j by 1. 5. If b[j] = ‘\0’vthen flag = 1 and print substring found. 6. Else flag = 0, substring not found. 7. Stop. **Algorithm for palindrome:** 1. Start. 2. Initialize i, j and c=0. 3. Get two arrays a and b from the user. 4. If a[i] is not equal to ‘\0’ then increment c by 1. 5. For i = c-1, i>0 and j<c, assign b[i] = a[j] 6. If b[i] = a[i] then print string is palindrome else not palindrome. 7. Stop. **Algorithm for compare:** 1. Start. 2. Get two arrays a and b from the user. 3. Initialize i = 0. 4. Compare the lengths of both strings.

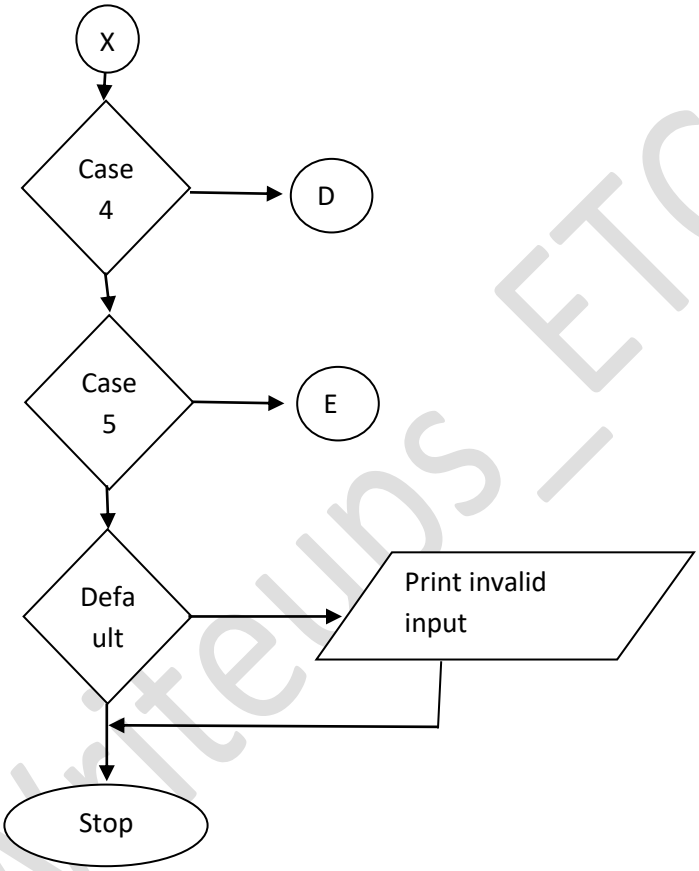
4.a. If the length is same, then compare each element of a with b and if a[i] is not equal to b[i], print strings are not same.
5. Stop.

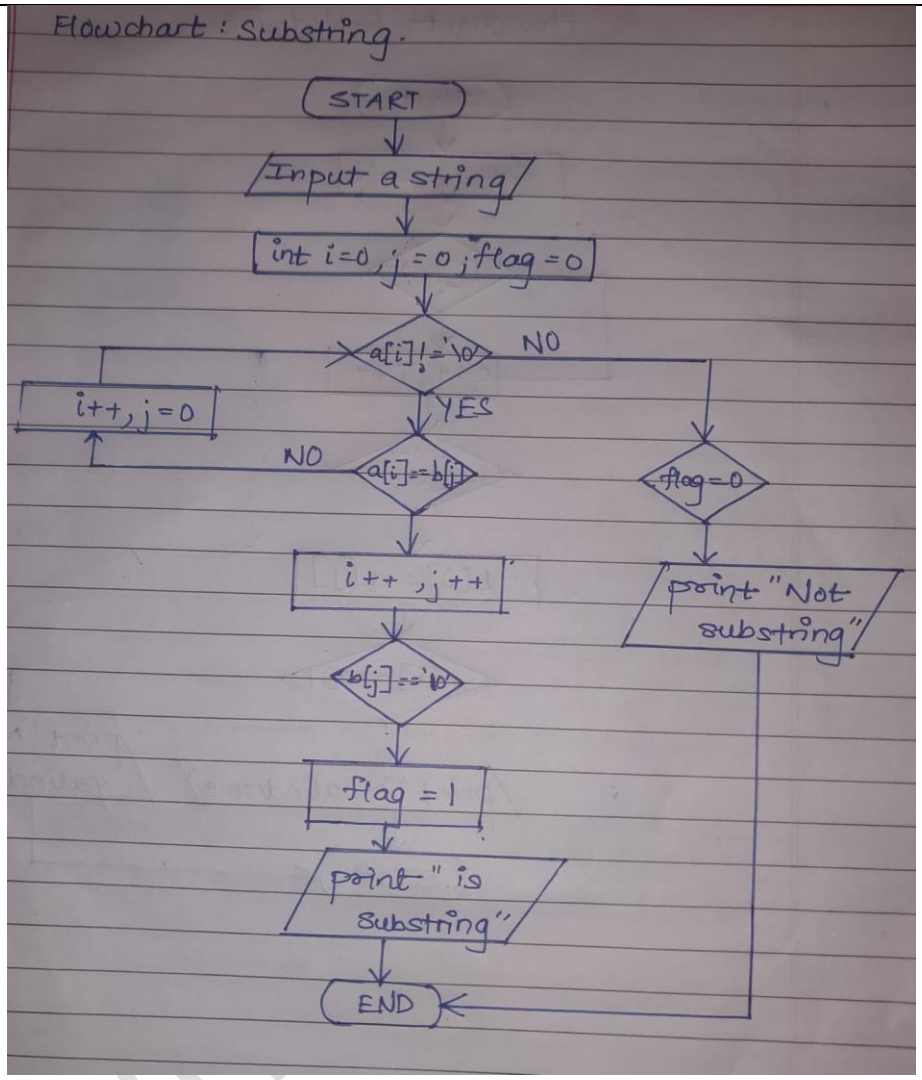
Algorithm for copy:
1. Start.
2. Get two arrays a and b from the user.
3. Initialize i = 0.
4. If i < (length of a), assign the value of a[i]=b[i]
5. Increment i by 1 till i < (length of string)

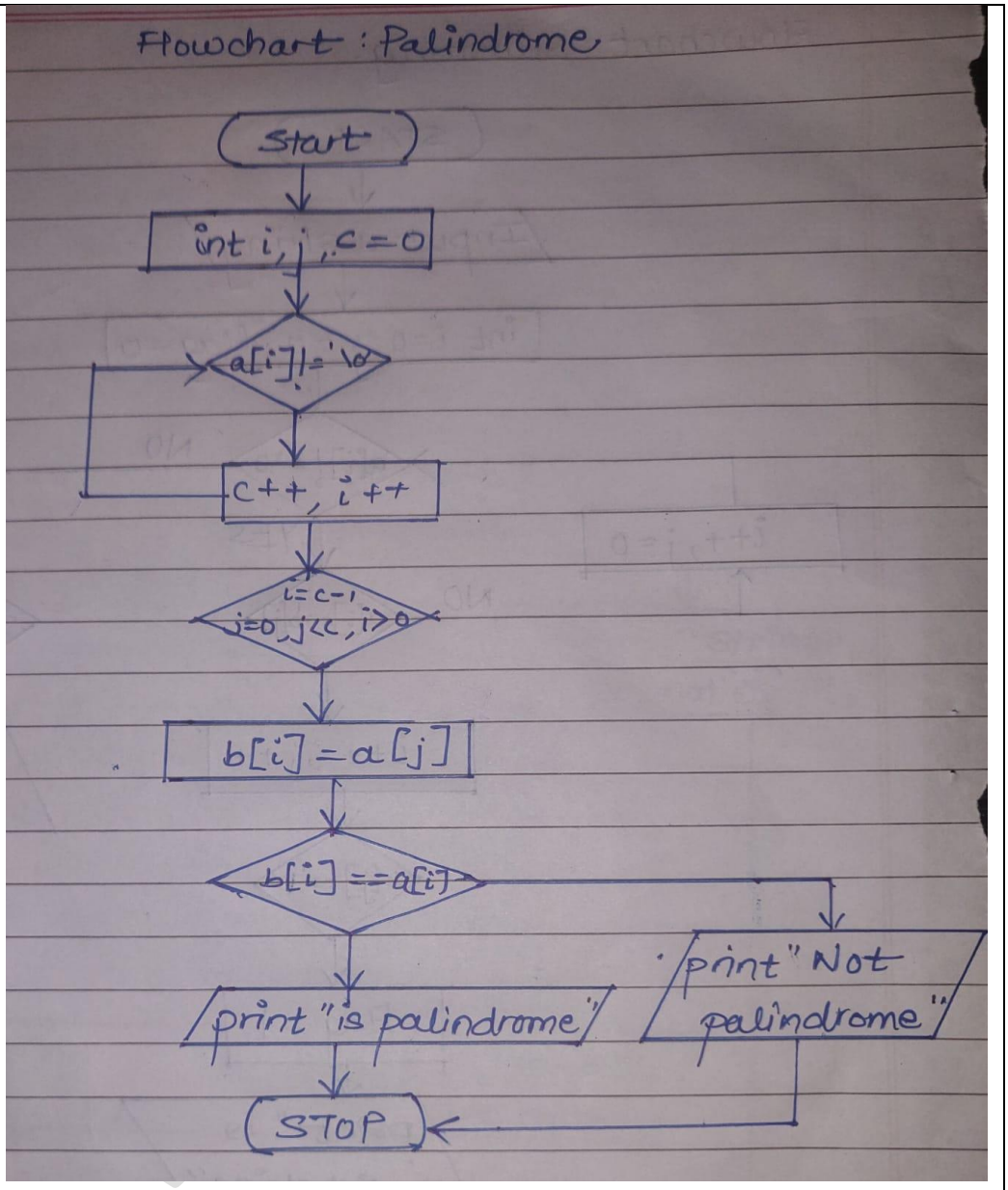
Algorithm for reverse:
1. Start.
2. Initialize i, j and c=0.
3. Get two arrays a and b from the user.
4. If a[i] is not equal to '\0' then increment c by 1.
5. For i = c-1, i>0 and j<c, assign b[i] = a[j] and increment j by 1 and decrement i by 1.
6. Print reverse of string.
7. Stop.

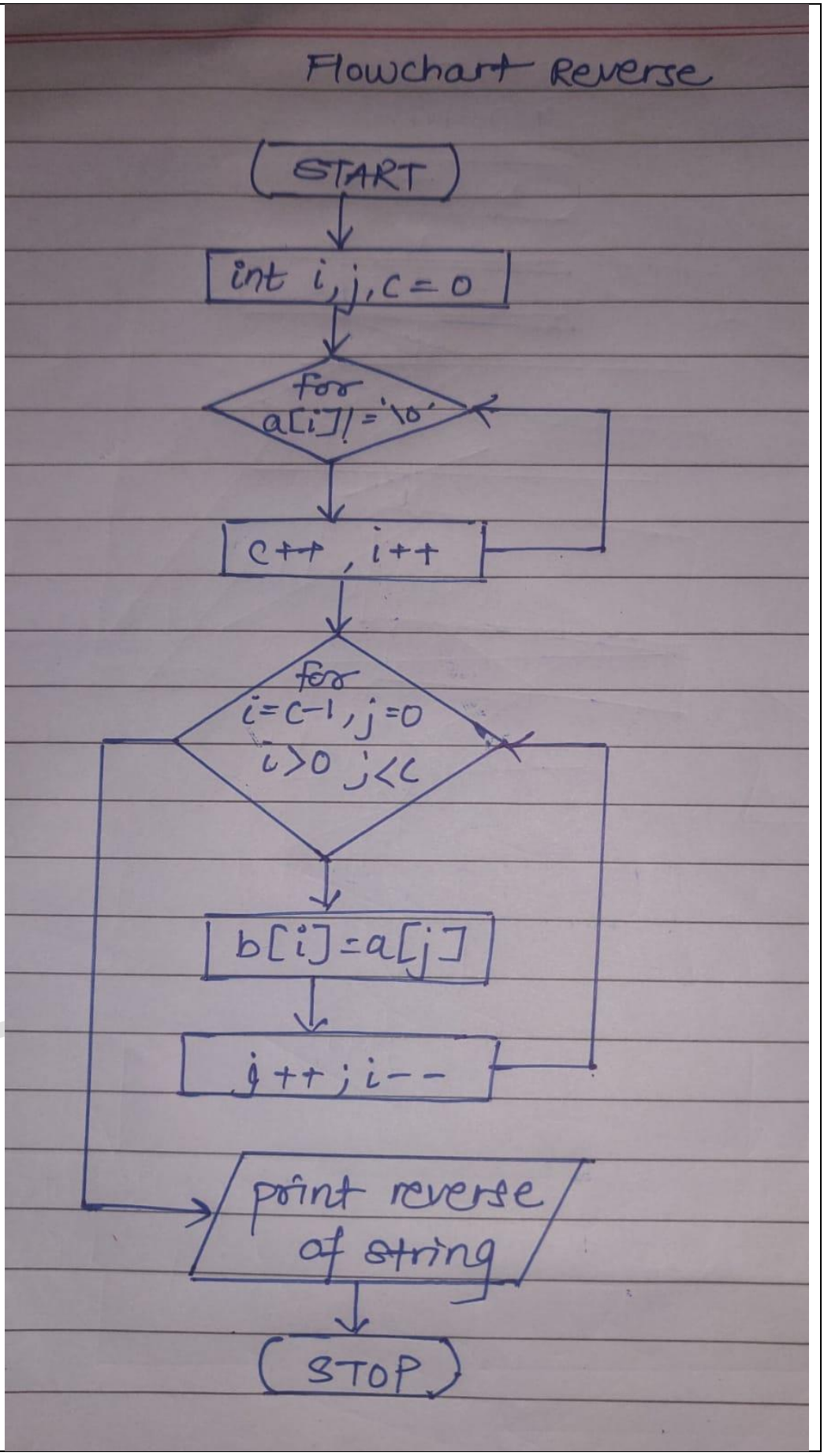
Flow-chart

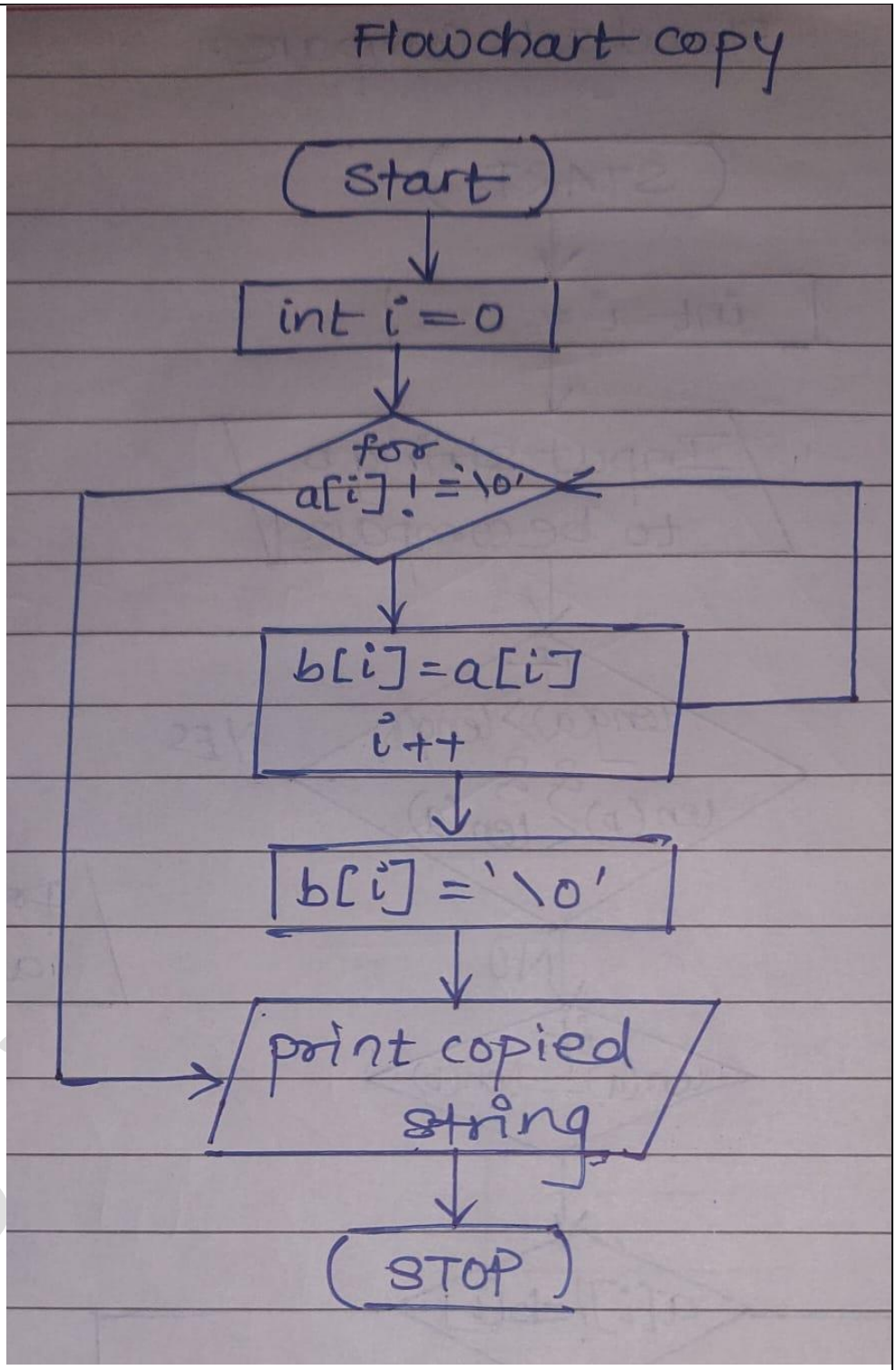


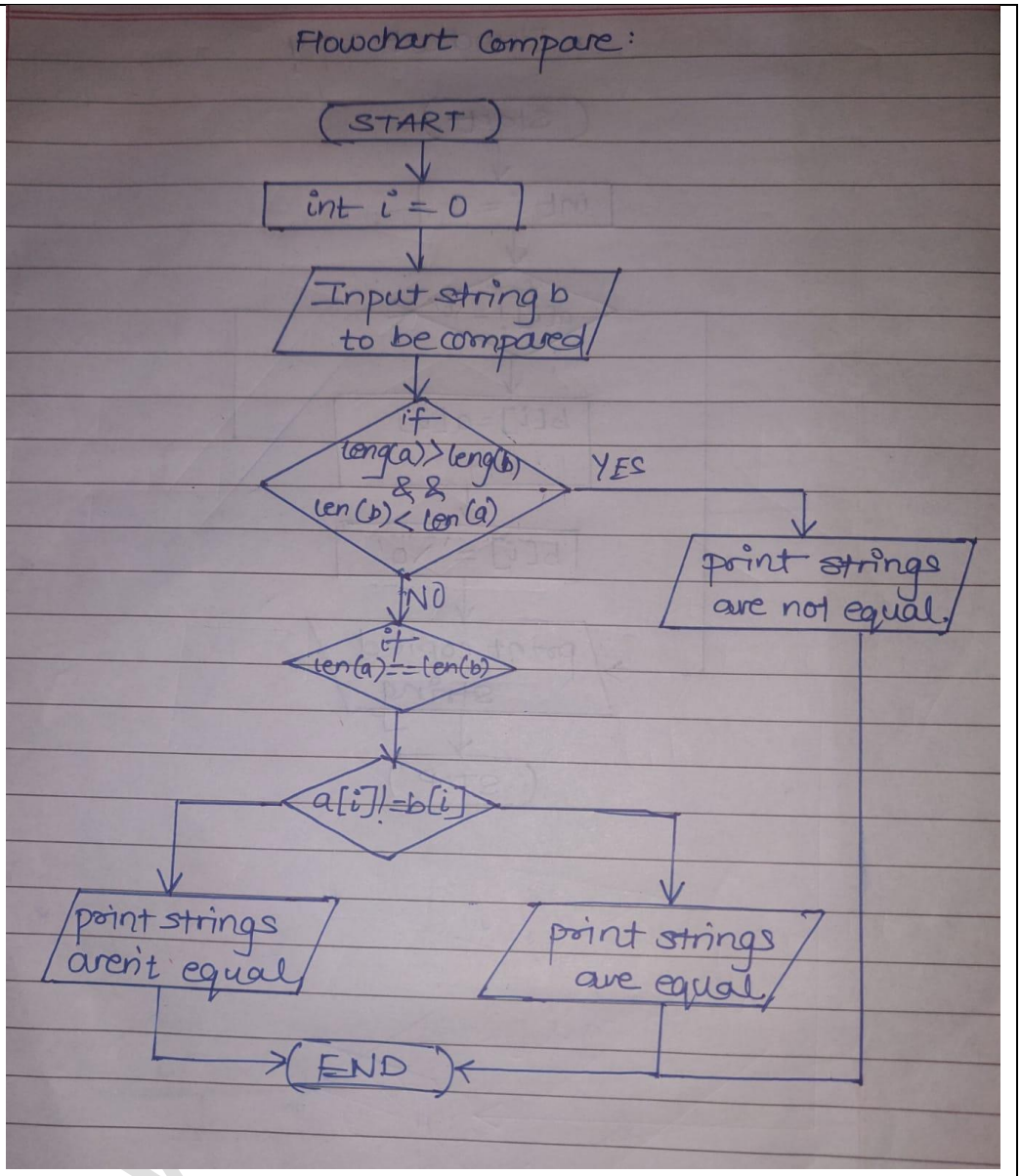



Flowchart : Substring.
START
Input a string
int i=0, j=0; flag=0
a[i]!='\0'
NO
YES
i++, j=0
NO
a[i]==b[j]
flag=0
i++ , j++
print "Not substring"
b[j]=='\0'
flag = 1
print " is substring"
END


Flowchart : Palindrome
Start
int i, j, c = 0
a[i] != '\0'
c++, i++
i = c-1
j=0, j<c, i>0
b[i] = a[j]
b[i] == a[i]
print "is palindrome"
print "Not palindrome"
STOP


Flowchart Reverse
START
int i,j,c=0
for a[i]!='\0'
c++, i++
for i=c-1, j=0 i>0 j<c
b[i]=a[j]
j++; i--
print reverse of string
STOP


Flowchart copy
Start
int i=0
for
a[i] != '\0'
b[i]=a[i]
i++
b[i] = '\0'
print copied
string
STOP


Flowchart Compare:
START
int i = 0
Input string b to be compared
if len(a) > len(b) && len(b) < len(a)
YES
print strings are not equal
NO
if len(a) == len(b)
a[i] != b[i]
print strings aren't equal
print strings are equal
END

ERROR	**No error**
REMEDY	**(if any)**
CONCLUSION:	
	• **In this way the program to perform operations on string was performed** • **We learnt how to use user defined functions , pointer, and switch case**
REFERENCES:	
	1) Seymour Lipschutz, Data Structure with C, Schaum's Outlines, Tata McGrawHill 2) E Balgurusamy - Programming in ANSI C, Tata McGraw-Hill (Third Edition) 3) Yashavant Kanetkar- Let Us C, BPB Publication, 8th Edition.

Continuous Assessment			**Assessed By**
RPP (5)	**ARR (5)**	**Total (10)**	**Signature:**
			Date: