ORIENTAL INSTITUTE OF SCIENCE AND TECHNOLOGY, BHOPAL

Practice Programming Questions (C Language)

Level: Learner



- 2. Wap to print your name, age and your address on console screen.
- 3. Wap to show print the output as given below on console screen-



4. Wap to print the output given below on console screen using carriage return



5. Wap to print the output given below on console screen using backspace escape sequence



- 6. Wap to print "Hello" using escape sequence on console screen.
- 7. w.a.p. to print the "HELLO" "USER" on the consol screen.
- 8. w.a.p. to print \ on the consol screen.
- 9. w.a.p. to print \\
- 10. w.a.p. to print Hello \n User.
- 11. w.a.p. Hello"user\n"\t.

- 12. w.a.p. to produce a beep sound from the cpu using alarm character (\a) and print the message Ding Dong.
- 13. w.a.p.to accept on int, float, and a character from the user and display them back.
- 14. Wap to accept two numbers from the users, swap them using third variable.
- 15. w.a.p. to accept a character from the user and print its corresponding ASCII value.
- 16. w.a.p.to modify the above code to accept any ASCII value from the user and print its corresponding character.
- 17. Write a program to accept two integers from the user, perform all arithmetic operations on it, and display the result
- 18. w.a.p to accept two integer and two float value and display the Sum.
- 19. w.a.p to calculate the simple interest according to given principle rate and time.
- 20. w.a.p.to accept marks of five subject of a student from the user and print the total, average and percentage. (Assume that full marks of each subject is 100).
- 21. wap to calculate the area and perimeter of rectangle.
- 22. wap to calculate the area of right angle triangle.
- 23. wap to calculate the area and perimeter of square.
- 24. wap to calculate the area and perimeter of circle.
- 25. w.a.p.to convert the temperature which is given in Celsius to Fahrenheit
- 26. w.a.p. to change the given temperature which is in Fahrenheit to Kelvin.
- 27. Wap to accept two numbers from the users, swap them without using third variable.
- 28. w.a.p. to calculate area and circumference of a circle. Assume that the radius is given by the user in cms. And you have to display the result in meter and inches.
- 29. Wap to accept three numbers from the user and find the greatest among them. Assume that all numbers are Unique.
- 30. w.a.p. to calculate the monthly salary of an employee after applying some rules on the basic salary-

i. 7%HRA

ii. 12% DA

iii. 6% PF

iv. 4% CA

- 31. w.a.p. which shows the use of sizeof() operator i.e. by using this operator show the amount of memory allotted for all data type with type modifiers also.
- 32. Wap to accept an integer from the user & check whether it is positive or negative. Assume that the user will not enter zero.
- 33. Wap to accept an integer from the user & check whether it is even or odd. Consider zero to be an even number.
- 34. Wap to accept two integers from user & print greater among them make sure that your program handles equality of number also.
- 35. Wap to accept a character from the user and check whether it is a capital letter or a small letter or a digit or something else
- 36. Wap to accept an integer from the user and check whether it is a multiple of 2 or a multiple of 3 or a multiple of both 2 and 3 or neither the multiple of 2 nor the multiple of 3.
- 37. Wap to accept three integers from the user and find the greatest among them. Assume that none of them are equal.
- 38. Wap to accept any alphabetic character from the user, and print it continue to do so until user press

- any digit.
- 39. Wap to calculate exact age of user in year months and days, make sure that your program should check the valid range of dates and the birth date falls before the current date
- 40. Wap to enter any number from 1 to 7 from the user and print its corresponding day starting from Monday.
- 41. Wa menu driven program to perform any one of the for standard arithmetic operations as desired by user on the given two integers. The operations are Addition, Subtraction, Multiplication, and Division.
- 42. Wap to accept any character from the user and check whether it is vowel or consonant. Make sure that the user should enter the character in uppercase if not so convert it to uppercase.
- 43. Wamdp to find the area of the figure selected by the user. The choices for figures are:
 - i. Circle

- ii. Rectangle
- iii. Square
- iv. Right angled Triangle
- 44. Wap to accept any integer from the user and check whether it is positive or negative using ternary operator.
- 45. Wap to accept two integers from the user and check which one is greater using ternary operator.
- 46. Modify the above code to make sure that your program should check the equality of entered integers also by using ternary operator.
- 47. Wap to print first N natural Numbers.
- 48. Wap to modify the above code to calculate the sum of first N natural Numbers.
- 49. Wap to calculate the value after applying power on it.
- 50. Wap to accept an integer from the user and print the table of that number up to 10 terms in well formatted form. Make sure that your program handles the condition if zero is entered.
- 51. Wap to accept an integer from the user and calculate its factorial, make sure that your program should print 1 if 0 is entered.
- 52. Wap to accept an integer from the user and display the sum of its first and last digit.
- 53. Wap to accept an integer from the user and print it in reverse order.
- 54. Wap to accept an integer from the user and check whether it is Armstrong or not.
- 55. Wap to accept two numbers from the user and assume that first number to be the base and second to be the base to be the base. Calculate the value and will assume that the user will input positive number only and power can be zero.
- 56. Wap to ask the user to input an integer repeatedly until user press zero, your code should display the sum of all the numbers which were entered before zero.
- 57. Wap to modify the above code so that your code will ignore negative numbers and adds only positive numbers.
- 58. Wap to again modify the above code and display the average of number also.
- 59. Wap to accept an integer from the user and check whether it is prime or not.
- ❖ Wap to print the following pattern on console screen-

60	* * * * * * * * * * * * *	67	* * * * * * * * * * * * *	74	* * * * * * * * * * * * * * * * * * *	81	* ** ** ***	88	* * * * * * * * * * * * * * *	95	* *** ****	102	***** *** ***
61	123 123	68	1 12	75	12345 1234	82	1 12	89	12345 1234	96	1 12	103	12345 1234

													21,10112
	123		123		123		123		123		123		123
			1234		12		1234		12		1234		12
			12345		1		12345		1		12345		1
			а		a b c d e		а		abcde		а		a b c d e
	a b c		a b		a b c d		a b		a b c d		a b	41	a b c d
62	a b c	69	a b c	76	abc	83	a b c	90	a b c	97	a b c	104	abc
	a b c		a b c d		a b		a b c d		a b		a b c d	#	a b
			abcde		а		a b c d e		а		a b c d e		a
			Α		AAAAA		Α		AAAAA		A		AAAAA
	AAA		ВВ		BBBB		ВВ		BBBB		B B		BBBB
63	BBB	70	CCC	77	ccc	84	CCC	91	ССС	98	ccc	105	ССС
	CCC		DDDD		D D		DDDD		DD		D D D D		D D
			EEEEE		E		EEEEE		E	· 7	EEEEE		E
			1		55555		1		5 5 5 5 5		1		55555
	111		22		4444		2 2	41	4444		22		4444
64	222	71	333	78	333	85	333	92	333	99	333	106	3 3 3
	333		4444		22		4444	1	2/2		4444		22
			55555		1		5 5 5 5 5		1		55555		1
	123		1		1 2 3 4		1		1 2 3 4		1		1 2 3 4
65	456	72	23	79	5 6 7	86	23	93	5 6 7	100	2 3	107	5 6 7
05	789	12	456	75	8 9	00	456	93	8 9	100	456	107	8 9
	703		78910		10		78910		10		78910		10
	a b c		a		a b c d		a		a b c d		а		a b c d
66	def	73	b c	80	e f g	87	b c	94	e f g	101	b c	108	e f g
00	ghi	/3	def	80	hi		def	94	hi	101	d e f	108	hi
	giii		ghij	41	j		ghij		j		ghlj		j
			*					1				а	
			* * *				1	23				a b c	:
			****		7		12	3 4 5			1	a b c d	le
109			* * * * * * *		11	0	123	4 5 6	7	111	а	b c d e	efg
		4	* * * * *				12	3 4 5				a b c d	le
			***				1	23				a b c	;
		A	*					1				а	

One Dimensional Array

- Write a program to create an array of 10 integers and accept the values from the user and print the sum and average of all the numbers of that
- 113. Write a program to modify the above code to print the sum of all the even numbers as well as of all the odd numbers respectively.
- 114. Again modify the above code so that your program should handle the situation if all the numbers are even and all the numbers are odd.

- 115. Write a program to create an array of 10 integers and accept values from the user in it. Now ask the user to input a number and find out the position of the number in the array. If the number is not there then print the message "Number not found" and assume that the array contains unique numbers only.
- Write a program to accept 10 integers in an integer array from the user, sort the elements in increasing order.

Strings (without using predefined functions)

- 117. Program to print a string in C
- 118. Program to print a string character by character in C
- 119. Program to find string length without function in C
- 120. Program to count character occurrent in C
- 121. Program to count vowels occurrent in C
- 122. Program to sort string characters in C
- 123. Program to copy string in C
- 124. Program to reverse string in C
- 125. Program to search strings in C
- 126. Program to swap strings in C
- 127. Program to compare two strings in C
- 128. Program to concatenate two strings in C
- 129. String Anagram program in in C
- 130. C Program to reverse words in a line
- 131. C Program to reverse a line
- 132. C Program to Sort Elements in Lexicographical Order (Dictionary Order)
- 133. C Program to Replace Lowercase Characters by Uppercase & Vice-Versa
- 134. C Program to Remove given Word from a String
- 135. C Program to Remove all Characters in Second String which are present in First String
- 136. C Program to Replace all the Characters by Lowercase
- 137. C Program to Reverse the String using Recursion
- 138. C Program to Reverse every Word of given String
- 139. C Program to Count the Number of Vowels & Consonants in a Sentence
- 140. C Program to Delete All Repeated Words in String
- 141. C/Program to Reverse the String using Both Recursion and Iteration
- 142. Program to Count the Total Number of Words in the Sentence using Command Line Argument
- 143. Write a C program to find length of a string.
- 144. Write a C program to copy one string to another string.
- 145. Write a C program to concatenate two strings.
- 146. Write a C program to compare two strings.
- 147. Write a C program to convert lowercase string to uppercase.
- 148. Write a C program to convert uppercase string to lowercase.
- 149. Write a C program to toggle case of each character of a string.
- 150. Write a C program to find total number of alphabets, digits or special character in a string.
- 151. Write a C program to count total number of vowels and consonants in a string.

- 152. Write a C program to count total number of words in a string.
- 153. Write a C program to find reverse of a string.
- 154. Write a C program to check whether a string is palindrome or not.
- 155. Write a C program to reverse order of words in a given string.
- 156. Write a C program to find first occurrence of a character in a given string.
- 157. Write a C program to find last occurrence of a character in a given string.
- 158. Write a C program to search all occurrences of a character in given string.
- 159. Write a C program to count occurrences of a character in given string.
- 160. Write a C program to find highest frequency character in a string.
- 161. Write a C program to find lowest frequency character in a string.
- 162. Write a C program to count frequency of each character in a string.
- 163. Write a C program to remove first occurrence of a character from string.
- 164. Write a C program to remove last occurrence of a character from string.
- 165. Write a C program to remove all occurrences of a character from string.
- 166. Write a C program to remove all repeated characters from a given string.
- 167. Write a C program to replace first occurrence of a character with another in a string.
- 168. Write a C program to replace last occurrence of a character with another in a string.
- 169. Write a C program to replace all occurrences of a character with another in a string.
- 170. Write a C program to find first occurrence of a word in a given string.
- 171. Write a C program to find last occurrence of a word in a given string.
- 172. Write a C program to search all occurrences of a word in given string.
- 173. Write a C program to count occurrences of a word in a given string.
- 174. Write a C program to remove first occurrence of a word from string.
- 175. Write a C program to remove last occurrence of a word in given string.
- 176. Write a C program to remove all occurrence of a word in given string.
- 177. Write a C program to trim leading white space characters from given string.
- 178. Write a C program to trim trailing white space characters from given string.
- 179. Write a C program to trim both leading and trailing white space characters from given string.
- 180. Write a C program to remove all extra blank spaces from given string.

Strings (predefined functions)

181. Write a set of programs which shows the use of all predefined functions of Strings.

Two-Dimensional Arrays

- 182. Write a program to create a 2D integer array of 3X4 size and accept the values from the user in it. Now print the sum and average of all the numbers of that array.
- 183 Write a program to accept a matrix of order 3X4 from the user, transpose it and display the result.
- 184. Write a program to accept two matrices A & B of order 3X4 each. Now add A and B and store the result in another matrix C and display it.
- 185. Write a program to accept 5 names from the user and store them in a 2D character array, now accept another character from the user and count how many times the given character is occurred in each name individually.

- 186. Write a program to accept 5 names from the user and store them in a 2D character array, now accept another name from the user and search it in the main array.
- 187. Write a program to calculate the factorial of a number using function. (Implement using take nothing return nothing type of function)
- 188. Write a program to calculate the factorial of a number using function. (Implement using take Something return nothing type of function)
- 189. Write a program to calculate the factorial of a number using function. (Implement using take nothing return Something type of function)
- 190. Write a program to calculate the factorial of a number using function. (Implement using take Something return Something type of function)
- 191. Write a program to check the greater of 3 nos. in a function and print the greatest number in calling function.
- 192. Wamdp to find the area of the figure selected by the user. The choices for figures are:
 - i. Circle

- ii. Rectangle
- iii. Square
- iv. Right angled Triangle

(your code should contain separate functions for corresponding figures)

- 193. Display all prime numbers between two Intervals
- 194. Swap two variables without using third variable using functions.
- 195. Check Prime and Armstrong Number by making function
- 196. Check whether a number can be expressed as the sum of two prime number using functions.
- 197. Convert binary number to decimal and vice-versa using functions.
- 198. Convert octal Number to decimal and vice-versa using functions.
- 199. Convert binary number to octal and vice-versa
- 200. Write a program to calculate the factorial of a given number by using linear or direct recursion.
- 201. Write a program to calculate the factorial of a given number by using tail recursion.
- 202. Write a program to generate the Fibonacci sequence by using recursion.
- 203. Write a program to print the sequence of numbers with a message the printing number is even or odd up to a given range by using mutual recursion.
- 204. Find sum of natural numbers using recursion
- 205. Find G.C.D using recursion
- 206. Reverse a sentence using recursion
- 207. Calculate the power of a number using recursion
- 208. Write a program which illustrates the use of pointer variables
- 209. Write a program to store and access the elements of integer array using pointer.
- 210. Write a program using malloc function to allocate a block of two bytes, accept an integer in it. Calculate the sum of its individual digit and print it
- 211. Write a program using the CALLOC function to allocate 5 blocks each of size int. Accept 5 integers in it, display them and calculate the sum of all the elements stored in it.

- 212. Write a program to create the memory space for 5 integers dynamically, store the data in it. Now, reallocate the previously allocated space for 10 integers. Store the rest 5 integers and display them.
- 213. Write a program to store the roll number, name and marks of 3 students using structure and display them back.
- 214. Write a program to illustrate the use of "Array of Structures".
- 215. Write a program to show the implementation of Nested Structure.
- 216. Write a program for passing structure as an argument in a function.
- 217. Write a program to create a file and write a text in it
- 218. Write a Program to Display contents of a file on screen
- 219. Write a Program to append the contents to the file.
- 220. Write a Program to prompt user for filename and display file on screen.
- 221. Write a program to count the number of lines and characters in a file.
- Write a Program to compare two files specified by the user, displaying a message indicating whether the files are identical or different.
- 223. Write a C Program to merge contents of two files into a third file.
- 224. Write a C program to print contents in reverse order of a file.
- Wap to accept 10 employee's detail (Salary, Code, City, Name) using structure, write the details of all the employees in a file. Now display the content of file from employee nth (n will be given by user) onwards.
- Wap to accept 10 employee's detail (Salary, Code, City, Name) using structure, write the details of all the employees in a file. Now ask the user to enter an employee code, Search the particular record in the file and delete it, Display remaining contents with total employee count.
- 227. Write a program to print source code of a C program itself.



ORIENTAL INSTITUTE OF SCIENCE AND TECHNOLOGY, BHOPAL

Practice Programming Questions (C Language)

Level: Expert

Question 1.

There are N tubs of water, numbered from 1 to N. Initially there is a few litres of water in each tub. Each water tub has 2 taps attached to it. Incoming Tap with speed x litres / second and Outgoing Tap with speed y litres / second. Let water(i) denote the final volume of water in ith tub. Amit wants to attain such a situation that water(i) < water(i+1) for 1<=i <=N. i.e. water in each tub must be less than water in the tub next to it. He wants to do this as quickly as possible. You task is to find out and tell Amit, what is the minimum number of seconds required to attain in this situation.

Input Format: First line will contains the number of tubs, denoted by N Next N lines contain a tuple with 3 integers delimited by white space. The tuple contents are

- Wi- volume of water present initially in ith tub (in litres)
- x speed of incoming tap of ith tub (-in litres/second)
- y speed of outgoing tap of ith tub (in litres/second)

Output Format: Minimum time in seconds, needed to arrange water in N tubs, in ascending order of volume.

Constraints:2 < N < 1000000 <= W <= 1000000000 (1 billion) for each tub1 <= x <= 10000 for

each tub1 = y = 10000 for each tub A tap can be used only for integral number of seconds i.e. you cannot use a tap for 0.3 or 0.5 seconds. It can be used either for 1,2,3.... Seconds Capacity of each tub is infinite. Volume of water in any tub cannot be less than zero at any point of

time. Any number of taps can be turned on or off simultaneously. Sample Input and Output

Explanation for sample input and output 1: Here we have 3 tubs with following information about each of them

Tub	Initial	Incoming	Outgoing
Numbe	Volume	Tap	Tap
Tub 1	2	3	3

Tub 2	3	4	5
Tub 3	3	5	5

Initially tub 2 and 3 have same volume of water. So he will just turn on the Incoming Tap at Tub 3 for one second. After one second the water in 3rd tub will be 8 litres. Since 2 < 3 < 8, the answer is 1 second.

Explanation for sample input and output 2: Here we have 3 tubs with following information about each of them

Tub Number	Initial Volume	Incoming Tap speed	Outgoing Tap speed
Tub 1	6	2	1
Tub 2	4	1	3

As we can see that it is impossible to do the task in one second. But it can be done in two second as below. Turn on the outgoing tap at tub 1. So after two seconds water level will reduce to 4 litres. Turn on the incoming tap at tub 2 only for one second. So water level will be 5 litres. Turn on the incoming tap at tub 3 for two seconds. So water level will be 6 litres. Since 4 < 5 < 6, the answer is 2 seconds.

Question 2.

In the Byteland country a string "S" is said to super ascii string if and only if count of each character in the string is equal to its ascii value.

In the Byteland country ascii code of 'a' is 1, 'b' is 2 ...'z' is 26.

Your task is to find out whether the given string is a super ascii string or not.

Input Format:

First line contains number of test cases T, followed by T lines, each containing a string "S".

Output Format:

For each test case print "Yes" if the String "S" is super ascii, else print "No"

Constraints:

1<=T<=100

1<=|S|<=400, S will contains only lower case alphabets ('a'-'z'). Sample Input and Output SNo. Input Output

Question 3.

Sheldon Cooper and his beverage paradigm Sheldon Cooper, Leonard Hofstadter and Penny decide to go for drinks at Cheese cake factory. Sheldon proposes to make a game out of this. Sheldon proposes as follows,

- To decide the amount of beverage they plan to consume, say X.
- •Then order for a random number of different drinks, say {A, B, C, D, E, F} of quantities {a, b, c, d, e, f} respectively.
- •If quantity of any three drinks add up to X then we'll have it else we'll return the order. E.g. If a + d
- + f = X then True else False

You are given

- 1. Number of bottles N corresponding to different beverages and hence their sizes
- 2. Next N lines, contain a positive integer corresponding to the size of the beverage
- 3.Last line consists of an integer value, denoted by X above

Your task is to help find out if there can be any combination of three beverage sizes that can sum up to the quantity they intend to consume. If such a combination is possible print True else False

Input Format:

- 1. First line contains number of bottles ordered denoted by N
- 2. Next N lines, contains a positive integer Ai, the size of the ith bottle
- 3. Last line contains the quantity they intend to consume denoted by X in text above

Output Format: True, if combination is possible False, if combination is not possible

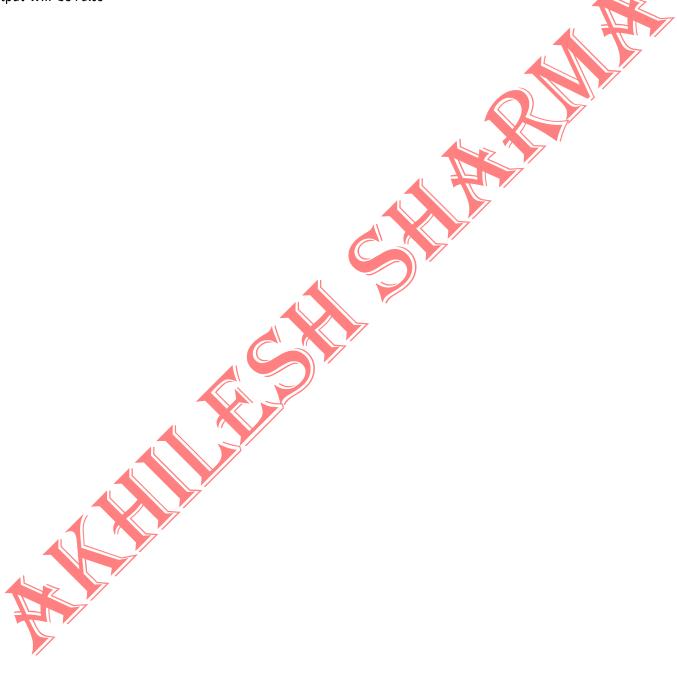
Constraints: $N \ge 3 \text{ Ai } > 0 \ 1 \le i \le N \ X > 0$ Sample Input and Output

SNo		
	Innut	Outnu
1	6 1 4 45 6 10 8 22	True

2 4 1 3 12 4 14 False

Explanation for sample input and output 1: The sum of 2nd, 5th and 6th beverage size is equal to 22. So the output will be True.

Explanation for sample input and output 2: Since no combination of given beverage sizes sum up to X i.e. 14, the output will be False



Question 4.

Milk Man and His Bottles A Milkman serves milk in packaged bottles of varied sizes. The possible size of the bottles are {1, 5, 7 and 10} litres. He wants to supply desired quantity using as less bottles as possible irrespective of the size. Your objective is to help him find the minimum number of bottles required to supply the given demand of milk.

Input Format: First line contains number of test cases N Next N lines, each contain a positive integer Liwhich corresponds to the demand of milk.

Output Format: For each input Li, print the minimum number of bottles required to

fulfill the demand

Explanation: Number of test cases is 2

- In first test case, demand of milk is 17 litres which can be supplied using minimum of 2 bottles as follows
 - 1 x 10 litres and
 - 1 x 7 litres
 - In second test case, demand of milk is 65 litres which can be supplied using minimum of 7 bottles as follows

6 x 10 litres and

x 5 litres

Question 5.

Saving for a rainy day By nature, an average Indian believes in saving money. Some reports suggest that an average Indian manages to save approximately 30+% of his salary. Dhaniram is one such hard working fellow. With a view of future expenses, Dhaniram resolves to save a certain amount in order to meet his cash flow demands in the future. Consider the following example. Dhaniram wants to buy a TV. He needs to pay Rs 2000/- per month for 12 installments to own the TV. If let's say he gets 4% interest per annum on his savings bank account, then Dhaniram will need to deposit a certain amount in the bank today, such that he is able to withdraw Rs 2000/-

per month for the next 12 months without requiring any additional deposits throughout. Your task is to find out how much Dhaniram should deposit today so that he gets assured cash flows for a fixed period in the future, given the rate of interest at which his money will grow during this period.

Input Format: First line contains desired cash flow **M** Second line contains period in months denoted by **T** Third line contains rate per annum **R** expressed in percentage at which deposited amount will grow

Output Format: Print total amount of money to be deposited now rounded off to the nearest integer Constraints: M > 0 T > 0 R >= 0 Calculation should be done upto 11-digit Precision.

Question 6.

A robot is programmed to move forward F meters and backwards again, say B meters, in a straight line. The Robot covers 1 meter in T units of time. On Robot's path there is a ditch at a distance FD from initial position in forward direction as well as a ditch at a distance BD from initial position in backward direction. This forward and backward movement is performed repeatedly by the Robot. Your task is to calculate

amount of time taken, before the Robot falls in either ditch, if at all it falls in a ditch. Input

Format: First line contains total number of test cases, denoted by N Next N lines, contain a tuple containing 5 values delimited by space F B T FD BD, where

- 1. **F** denotes forward displacement in meters
- 2. **B** denotes backward displacement in meters
- 3. T denotes time taken to cover 1 meter
- 4. **FD** denotes distance from Robot's starting position and the ditch in forward direction
- 5. **BD** denotes distance from Robot's starting position and the ditch in backward direction

Output Format: For each test case print time taken by the Robot to fall in the ditch and also state which ditch he falls into. Print F for forward and B for backward. Both the outputs must be delimited by whitespace **OR** Print No Ditch if the Robot does not fall in either ditch

Constraints: First move will always be in forward direction 1 <= N <=

100 forward displacement > 0 backward displacement > 0 time > 0 distance of ditch in forward direction (FD) > 0 distance of ditch in backward direction (BD) > 0 All input values must be positive integers only

