Logic Building Hour (LBH) Plan

[Applicable to all PRP programming streams that include programming languages such as Java, C, C++, C#, Python]

Background: Improving logic building skill is an important aspect in a programmer's journey. All PRP programming streams such as Java, UNIX (C/C++), Python and .NET (C#) are designed to nurture this skill in beginners. Logic building skill can be improved only by regular and focused practice.

What is Logic Building Hour (LBH)?
Logic Building Hour (LBH) is a dedicated 1 to 1.5 hours per day, when the students are expected to work on logic building exercises.

Will Logic Building Hour (LBH) start from day-1 of the technical phase in PBL batches?
No. The initial 2 to 3 days of the technical phase of all PBL programming streams (i.e. Java, Unix, .NET and Mobility streams) will focus on understanding the fundamentals of the programming language. It is expected that logic building practice must start from day-3 or day-4.

Below is the day-wise plan to be followed for the Logic Building Hour (LBH)

Suggested Timing: 4.30 PM to 6 PM

<table>
<tr><td>Day-1

Day-2</td><td>Objective of Day1 and Day2 : Learn the basics of the programming language

During the first two days of PBL, the students should have learnt the fundamentals of programming language and should be comfortable with the basic programming constructs.
- conditional statements
- looping constructs
- data types</td></tr>
<tr><td></td><td>By the end of Day2 :Students should be able to demonstrate their understanding of 'conditions' and 'loops' by being able to write the below programs

<u>Programs to demonstrate learner's understanding of "Conditional statements"</u>
• Write a program to accept a number N and print whether it is positive, negative or zero
• Write a program to accept two numbers and print the greater value of the two
• Write a program to accept a number N and print whether the number is EVEN or ODD
• Write a program to accept two numbers and print whether their sum is EVEN or ODD

<u>Programs to demonstrate learner's understanding of "Looping constructs"</u>
• Write a program to print all numbers from 1 to 100 i.e. 1 2 3 4 5 6 7 . . . 98 99 100
• Write a program to print alternate numbers starting from 1 to 99 i.e. 1 3 5 7 9. . . 95 97 99
• Write a program to print alternate numbers starting from 0 to 100 i.e. 0 2 4 6 . . . 96 98 100
• Write a program to print all numbers backwards from 100 to 0 i.e. 100 99 98 . . . 4 3 2 1 0
• Write a program to print numbers backwards from 100 to 1 by skipping 2 numbers i.e. 100 97 94 91 88 85 82 79. . . 22 19 16 13 10 7 4 1

NOTE: If the student is unable to do any of the above programs, he/she should immediately clarify their doubts with the faculty/mentor.</td></tr>
<tr><td>Day-3</td><td>Students who have NOT been able to complete the above mentioned programs on day-2, MUST complete them on day-3.

Objective of Day3: Learn the use of division / and mod % operations to solve problems

<u>Solve the below questions using the respective IDE.</u>
• Is Even?
Write a function to find whether the given input number is Even.
If the given number is even, the function should return 2 else it should return 1.
Note: The number passed to the function can be negative, positive or zero.
Zero should be treated as Even.</td></tr>
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- Is Odd?

Write a function to find whether the given input number is Odd.
If the given number is odd, the function should return 2 else it should return 1.
Note: The number passed to the function can be negative, positive or zero.
Zero should NOT be treated as odd.

- Return last digit of the given number

Write a function that returns the last digit of the given number.
Last digit is being referred to the least significant digit i.e. the digit in the ones (units) place in the given number.
The last digit should be returned as a positive number.
for example,
if the given number is 197, the last digit is 7
if the given number is -197, the last digit is 7

- Return second last digit of the given number

Write a function that returns the second last digit of the given number.
Second last digit is being referred to the digit in the tens place in the given number.
for example,
if the given number is 197, the second last digit is 9

Note1 - The second last digit should be returned as a positive number.
i.e. if the given number is -197, the second last digit is 9

Note2 - If the given number is a single digit number, then the second last digit does not exist.
In such cases, the function should return -1.
i.e. if the given number is 5, the second last digit should be returned as -1

- Sum of last digits of two given numbers

Rohit wants to add the last digits of two given numbers.
For example,
If the given numbers are 267 and 154, the output should be 11.
Below is the explanation –
Last digit of the 267 is 7
Last digit of the 154 is 4
Sum of 7 and 4 = 11

Write a program to help Rohit achieve this for any given two numbers.
The prototype of the method should be –

int addLastDigits(int input1, int input2);
where input1 and input2 denote the two numbers whose last digits are to be added.

Note: The sign of the input numbers should be ignored.
i.e.
if the input numbers are 267 and 154, the sum of last two digits should be 11
if the input numbers are 267 and -154, the sum of last two digits should be 11
if the input numbers are -267 and 154, the sum of last two digits should be 11
if the input numbers are -267 and -154, the sum of last two digits should be 11

Day-4

Question Title	Mettl practice test link
IsEven	https://tests.mettl.com/authenticateKey/2bd025dc
Of the given 5 numbers, How many are even or odd?	https://tests.mettl.com/authenticateKey/607636d7
Even OR Odd Digits' Sum	https://tests.mettl.com/authenticateKey/a05abbcf
DigitSum - all	https://tests.mettl.com/authenticateKey/ab1d60cc

Day-5

Question Title	Mettl practice test link
nthFibonacci	https://tests.mettl.com/authenticateKey/f390cadf
Array even odd processing	https://tests.mettl.com/authenticateKey/3acfa7c8
Sum of digits in cyclic order	https://tests.mettl.com/authenticateKey/1ddbe65e
Sum of power of digits	https://tests.mettl.com/authenticateKey/92437794
Sum of non prime index values	https://tests.mettl.com/authenticateKey/596e522f
isPalindrome	https://tests.mettl.com/authenticateKey/ffe8042

Day-6

Question Title	Mettl practice test link
Most Frequent Digit	https://tests.mettl.com/authenticateKey/916310b8
Weight of a hill pattern	https://tests.mettl.com/authenticateKey/d612c0e6
Weight of String	https://tests.mettl.com/authenticateKey/387952fc
Read second word and change to Uppercase	https://tests.mettl.com/authenticateKey/4a72723f
Stable and unstable	https://tests.mettl.com/authenticateKey/5106dfd

Day-7

Question Title	Mettl practice test link
User id generation	https://tests.mettl.com/authenticateKey/592740f3
Create password	https://tests.mettl.com/authenticateKey/82f87944
3 Questions	https://tests.mettl.com/authenticateKey/a00c2b03

Day-8

Morning: Assessment Milestone-1