Problem 1290: Convert Binary Number in a Linked List to Integer

Problem Information

Difficulty: Easy
Acceptance Rate: 0.00%
Paid Only: No

Problem Description

Given

head

which is a reference node to a singly-linked list. The value of each node in the linked list is either

0

or

1

. The linked list holds the binary representation of a number.

Return the

decimal value

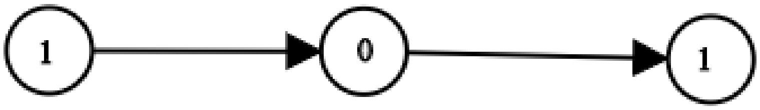
of the number in the linked list.

The

most significant bit

is at the head of the linked list.

Example 1:



Input:

head = [1,0,1]

Output:

5

Explanation:

(101) in base 2 = (5) in base 10

Example 2:

Input:

head = [0]

Output:

0

Constraints:

The Linked List is not empty.

Number of nodes will not exceed

30

.

Each node's value is either

0

or

1

.

Code Snippets

C++:

```
/**
* Definition for singly-linked list.
* struct ListNode {
* int val;
* ListNode *next;
* ListNode() : val(0), next(nullptr) {}
* ListNode(int x) : val(x), next(nullptr) {}
* ListNode(int x, ListNode *next) : val(x), next(next) {}
* };
*/
class Solution {
public:
int getDecimalValue(ListNode* head) {

}
};
```

Java:

```
/**
* Definition for singly-linked list.
* public class ListNode {
* int val;
* ListNode next;
* ListNode() {}
* ListNode(int val) { this.val = val; }
* ListNode(int val, ListNode next) { this.val = val; this.next = next; }
* }
*/
class Solution {
public int getDecimalValue(ListNode head) {

}
}
```

Python3:

```
# Definition for singly-linked list.
# class ListNode:
# def __init__(self, val=0, next=None):
# self.val = val
# self.next = next
class Solution:
def getDecimalValue(self, head: Optional[ListNode]) -> int:
```

Python:

```
# Definition for singly-linked list.
# class ListNode(object):
# def __init__(self, val=0, next=None):
# self.val = val
# self.next = next
class Solution(object):
def getDecimalValue(self, head):
"""
:type head: Optional[ListNode]
:rtype: int
"""
```

JavaScript:

```
/**
* Definition for singly-linked list.
* function ListNode(val, next) {
* this.val = (val===undefined ? 0 : val)
* this.next = (next===undefined ? null : next)
* }
*/
/**
* @param {ListNode} head
* @return {number}
*/
var getDecimalValue = function(head) {

};
```

TypeScript:

```
/**
* Definition for singly-linked list.
* class ListNode {
* val: number
* next: ListNode | null
* constructor(val?: number, next?: ListNode | null) {
* this.val = (val===undefined ? 0 : val)
* this.next = (next===undefined ? null : next)
* }
* }
*/

function getDecimalValue(head: ListNode | null): number {

};
```

C#:

```
/**
* Definition for singly-linked list.
* public class ListNode {
* public int val;
* public ListNode next;
* public ListNode(int val=0, ListNode next=null) {
* this.val = val;
* this.next = next;
* }
* }
*/
public class Solution {
```

```
public int GetDecimalValue(ListNode head) {

}
}
```

C:

```
/**
* Definition for singly-linked list.
* struct ListNode {
* int val;
* struct ListNode *next;
* };
*/
int getDecimalValue(struct ListNode* head) {

}
```

Go:

```
/**
* Definition for singly-linked list.
* type ListNode struct {
* Val int
* Next *ListNode
* }
*/
func getDecimalValue(head *ListNode) int {

}
```

Kotlin:

```
/**
* Example:
* var li = ListNode(5)
* var v = li.`val`
* Definition for singly-linked list.
* class ListNode(var `val`: Int) {
* var next: ListNode? = null
* }
*/
```

```
class Solution {
fun getDecimalValue(head: ListNode?): Int {

}
}
```

Swift:

```
/**
* Definition for singly-linked list.
* public class ListNode {
* public var val: Int
* public var next: ListNode?
* public init() { self.val = 0; self.next = nil; }
* public init(_ val: Int) { self.val = val; self.next = nil; }
* public init(_ val: Int, _ next: ListNode?) { self.val = val; self.next = next; }
* }
*/
class Solution {
func getDecimalValue(_ head: ListNode?) -> Int {

}
}
```

Rust:

```
// Definition for singly-linked list.
// #[derive(PartialEq, Eq, Clone, Debug)]
// pub struct ListNode {
// pub val: i32,
// pub next: Option<Box<ListNode>>
// }
//
// impl ListNode {
// #[inline]
// fn new(val: i32) -> Self {
// ListNode {
// next: None,
// val
// }
// }
// }
impl Solution {
pub fn get_decimal_value(head: Option<Box<ListNode>>) -> i32 {

}
}
```

Ruby:

```
# Definition for singly-linked list.
# class ListNode
# attr_accessor :val, :next
# def initialize(val = 0, _next = nil)
# @val = val
# @next = _next
# end
# end
# @param {ListNode} head
# @return {Integer}
def get_decimal_value(head)

end
```

PHP:

```
/**
* Definition for a singly-linked list.
* class ListNode {
* public $val = 0;
* public $next = null;
* function __construct($val = 0, $next = null) {
* $this->val = $val;
* $this->next = $next;
* }
* }
*/
class Solution {

/**
* @param ListNode $head
* @return Integer
*/
function getDecimalValue($head) {

}
}
```

Dart:

```
/**
* Definition for singly-linked list.
* class ListNode {
* int val;
* ListNode? next;
* ListNode([this.val = 0, this.next]);
* }
*/
class Solution {
int getDecimalValue(ListNode? head) {

}
}
```

Scala:

```
/**
* Definition for singly-linked list.
* class ListNode(_x: Int = 0, _next: ListNode = null) {
* var next: ListNode = _next
* var x: Int = _x
* }
*/
object Solution {
def getDecimalValue(head: ListNode): Int = {

}
}
```

Elixir:

```
# Definition for singly-linked list.
#
# defmodule ListNode do
# @type t :: %__MODULE__{
```

```
# val: integer,
# next: ListNode.t() | nil
# }
# defstruct val: 0, next: nil
# end

defmodule Solution do
@spec get_decimal_value(head :: ListNode.t | nil) :: integer
def get_decimal_value(head) do

end
end
```

Erlang:

```
%% Definition for singly-linked list.
%%
%% -record(list_node, {val = 0 :: integer(),
%% next = null :: 'null' | #list_node{}}).

-spec get_decimal_value(Head :: #list_node{} | null) -> integer().
get_decimal_value(Head) ->
.
```

Racket:

```
; Definition for singly-linked list:
#|

; val : integer?
; next : (or/c list-node? #f)
(struct list-node
(val next) #:mutable #:transparent)

; constructor
(define (make-list-node [val 0])
(list-node val #f))

|#

(define/contract (get-decimal-value head)
(-> (or/c list-node? #f) exact-integer?)
)
```

Solutions

C++ Solution:

```
/*
* Problem: Convert Binary Number in a Linked List to Integer
* Difficulty: Easy
* Tags: graph, math, linked_list
*
* Approach: Optimized algorithm based on problem constraints
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(1) to O(n) depending on approach
*/

/**
* Definition for singly-linked list.
* struct ListNode {
* int val;
* ListNode *next;
* ListNode() : val(0), next(nullptr) {
// TODO: Implement optimized solution
return 0;
}
* ListNode(int x) : val(x), next(nullptr) {
// TODO: Implement optimized solution
return 0;
}
* ListNode(int x, ListNode *next) : val(x), next(next) {
// TODO: Implement optimized solution
return 0;
}
* };
*/
class Solution {
public:
int getDecimalValue(ListNode* head) {

}
};
```

Java Solution:

```
/**
* Problem: Convert Binary Number in a Linked List to Integer
* Difficulty: Easy
* Tags: graph, math, linked_list
*
* Approach: Optimized algorithm based on problem constraints
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(1) to O(n) depending on approach
*/

/**
* Definition for singly-linked list.
* public class ListNode {
* int val;
* ListNode next;
* ListNode() {
// TODO: Implement optimized solution
return 0;
}
* ListNode(int val) { this.val = val; }
* ListNode(int val, ListNode next) { this.val = val; this.next = next; }
* }
*/
class Solution {
public int getDecimalValue(ListNode head) {

}
}
```

Python3 Solution:

```
"""
Problem: Convert Binary Number in a Linked List to Integer
Difficulty: Easy
Tags: graph, math, linked_list

Approach: Optimized algorithm based on problem constraints
```

```
Time Complexity: O(n) to O(n^2) depending on approach
Space Complexity: O(1) to O(n) depending on approach
"""

# Definition for singly-linked list.
# class ListNode:
# def __init__(self, val=0, next=None):
# self.val = val
# self.next = next
class Solution:
def getDecimalValue(self, head: Optional[ListNode]) -> int:
# TODO: Implement optimized solution
pass
```

Python Solution:

```
# Definition for singly-linked list.
# class ListNode(object):
# def __init__(self, val=0, next=None):
# self.val = val
# self.next = next
class Solution(object):
def getDecimalValue(self, head):
"""
:type head: Optional[ListNode]
:rtype: int
"""
```

JavaScript Solution:

```
/**
* Problem: Convert Binary Number in a Linked List to Integer
* Difficulty: Easy
* Tags: graph, math, linked_list
*
* Approach: Optimized algorithm based on problem constraints
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(1) to O(n) depending on approach
*/

/**
```

```
* Definition for singly-linked list.
* function ListNode(val, next) {
* this.val = (val===undefined ? 0 : val)
* this.next = (next===undefined ? null : next)
* }
*/
/**
* @param {ListNode} head
* @return {number}
*/
var getDecimalValue = function(head) {

};
```

TypeScript Solution:

```
/**
* Problem: Convert Binary Number in a Linked List to Integer
* Difficulty: Easy
* Tags: graph, math, linked_list
*
* Approach: Optimized algorithm based on problem constraints
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(1) to O(n) depending on approach
*/

/**
* Definition for singly-linked list.
* class ListNode {
* val: number
* next: ListNode | null
* constructor(val?: number, next?: ListNode | null) {
* this.val = (val===undefined ? 0 : val)
* this.next = (next===undefined ? null : next)
* }
* }
*/

function getDecimalValue(head: ListNode | null): number {

};
```

C# Solution:

```
/*
* Problem: Convert Binary Number in a Linked List to Integer
* Difficulty: Easy
* Tags: graph, math, linked_list
*
* Approach: Optimized algorithm based on problem constraints
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(1) to O(n) depending on approach
*/

/**
* Definition for singly-linked list.
* public class ListNode {
* public int val;
* public ListNode next;
* public ListNode(int val=0, ListNode next=null) {
* this.val = val;
* this.next = next;
* }
* }
*/
public class Solution {
public int GetDecimalValue(ListNode head) {

}
}
```

C Solution:

```
/*
* Problem: Convert Binary Number in a Linked List to Integer
* Difficulty: Easy
* Tags: graph, math, linked_list
*
* Approach: Optimized algorithm based on problem constraints
* Time Complexity: O(n) to O(n^2) depending on approach
* Space Complexity: O(1) to O(n) depending on approach
*/

/**
```

```
* Definition for singly-linked list.
* struct ListNode {
* int val;
* struct ListNode *next;
* };
*/
int getDecimalValue(struct ListNode* head) {

}
```

Go Solution:

```
// Problem: Convert Binary Number in a Linked List to Integer
// Difficulty: Easy
// Tags: graph, math, linked_list
//
// Approach: Optimized algorithm based on problem constraints
// Time Complexity: O(n) to O(n^2) depending on approach
// Space Complexity: O(1) to O(n) depending on approach

/**
* Definition for singly-linked list.
* type ListNode struct {
* Val int
* Next *ListNode
* }
*/
func getDecimalValue(head *ListNode) int {

}
```

Kotlin Solution:

```
/**
* Example:
* var li = ListNode(5)
* var v = li.`val`
* Definition for singly-linked list.
* class ListNode(var `val`: Int) {
* var next: ListNode? = null
* }
```

```
*/
class Solution {
fun getDecimalValue(head: ListNode?): Int {

}
}
```

Swift Solution:

```
/**
* Definition for singly-linked list.
* public class ListNode {
* public var val: Int
* public var next: ListNode?
* public init() { self.val = 0; self.next = nil; }
* public init(_ val: Int) { self.val = val; self.next = nil; }
* public init(_ val: Int, _ next: ListNode?) { self.val = val; self.next =
next; }
* }
*/
class Solution {
func getDecimalValue(_ head: ListNode?) -> Int {

}
}
```

Rust Solution:

```
// Problem: Convert Binary Number in a Linked List to Integer
// Difficulty: Easy
// Tags: graph, math, linked_list
//
// Approach: Optimized algorithm based on problem constraints
// Time Complexity: O(n) to O(n^2) depending on approach
// Space Complexity: O(1) to O(n) depending on approach

// Definition for singly-linked list.
// #[derive(PartialEq, Eq, Clone, Debug)]
// pub struct ListNode {
// pub val: i32,
// pub next: Option<Box<ListNode>>
// }
//
// impl ListNode {
// #[inline]
// fn new(val: i32) -> Self {
// ListNode {
// next: None,
// val
// }
// }
// }
impl Solution {
pub fn get_decimal_value(head: Option<Box<ListNode>>) -> i32 {

}
}
```

Ruby Solution:

```
# Definition for singly-linked list.
# class ListNode
# attr_accessor :val, :next
# def initialize(val = 0, _next = nil)
# @val = val
# @next = _next
# end
# end
# @param {ListNode} head
# @return {Integer}
def get_decimal_value(head)

end
```

PHP Solution:

```
/**
* Definition for a singly-linked list.
* class ListNode {
* public $val = 0;
* public $next = null;
* function __construct($val = 0, $next = null) {
```

```
* $this->val = $val;
* $this->next = $next;
* }
* }
*/
class Solution {

/**
* @param ListNode $head
* @return Integer
*/
function getDecimalValue($head) {

}
}
```

Dart Solution:

```
/**
* Definition for singly-linked list.
* class ListNode {
* int val;
* ListNode? next;
* ListNode([this.val = 0, this.next]);
* }
*/
class Solution {
int getDecimalValue(ListNode? head) {

}
}
```

Scala Solution:

```
/**
* Definition for singly-linked list.
* class ListNode(_x: Int = 0, _next: ListNode = null) {
* var next: ListNode = _next
* var x: Int = _x
* }
*/
```

```
object Solution {
def getDecimalValue(head: ListNode): Int = {

}
}
```

Elixir Solution:

```
# Definition for singly-linked list.
#
# defmodule ListNode do
# @type t :: %__MODULE__{
# val: integer,
# next: ListNode.t() | nil
# }
# defstruct val: 0, next: nil
# end

defmodule Solution do
@spec get_decimal_value(head :: ListNode.t | nil) :: integer
def get_decimal_value(head) do

end
end
```

Erlang Solution:

```
%% Definition for singly-linked list.
%%
%% -record(list_node, {val = 0 :: integer(),
%% next = null :: 'null' | #list_node{}}).

-spec get_decimal_value(Head :: #list_node{} | null) -> integer().
get_decimal_value(Head) ->
.
```

Racket Solution:

```
; Definition for singly-linked list:
#|
; val : integer?
; next : (or/c list-node? #f)
(struct list-node
(val next) #:mutable #:transparent)

; constructor
(define (make-list-node [val 0])
(list-node val #f))

|#

(define/contract (get-decimal-value head)
(-> (or/c list-node? #f) exact-integer?)
)
```