Exercise: Convert Decimal Integer to Binary

Challenge yourself to solve the problem in this lesson!

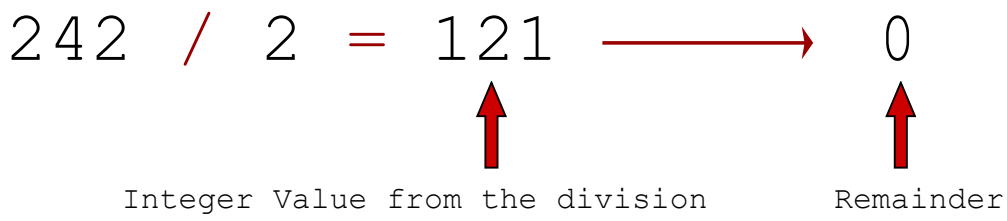
WE'LL COVER THE FOLLOWING

- Division by 2 Method
- Coding Time!

In this coding exercise, you are required to use the stack data structure to convert integer values to their binary equivalent.

Division by 2 Method

The slides below show how to use the ***division by 2*** method to compute the binary equivalent for an integer.




```
Divide the number by two.
Extract the non-fractional part from the answer
and record the remainder from the division.
```

$$242 / 2 = 121 \longrightarrow 0$$
$$121 / 2 = 60 \longrightarrow 1$$

Keep dividing the answer from the previous calculation by two until you reach zero and keep recording the remainders.

$$242 / 2 = 121 \longrightarrow 0$$
$$121 / 2 = 60 \longrightarrow 1$$
$$60 / 2 = 30 \longrightarrow 0$$

$$242 \;/\; 2 = 121 \longrightarrow 0$$
$$121 \;/\; 2 = 60 \longrightarrow 1$$
$$60 \;/\; 2 = 30 \longrightarrow 0$$
$$30 \;/\; 2 = 15 \longrightarrow 0$$

$$242 \;/\; 2 = 121 \longrightarrow 0$$
$$121 \;/\; 2 = 60 \longrightarrow 1$$
$$60 \;/\; 2 = 30 \longrightarrow 0$$
$$30 \;/\; 2 = 15 \longrightarrow 0$$
$$15 \;/\; 2 = 7 \longrightarrow 1$$

$$
\begin{aligned}
242 \;/\; 2 &= 121 \longrightarrow 0 \\
121 \;/\; 2 &= 60 \longrightarrow 1 \\
60 \;/\; 2 &= 30 \longrightarrow 0 \\
30 \;/\; 2 &= 15 \longrightarrow 0 \\
15 \;/\; 2 &= 7 \longrightarrow 1 \\
7 \;/\; 2 &= 3 \longrightarrow 1
\end{aligned}
$$

$$
\begin{aligned}
242 \;/\; 2 &= 121 \longrightarrow 0 \\
121 \;/\; 2 &= 60 \longrightarrow 1 \\
60 \;/\; 2 &= 30 \longrightarrow 0 \\
30 \;/\; 2 &= 15 \longrightarrow 0 \\
15 \;/\; 2 &= 7 \longrightarrow 1 \\
7 \;/\; 2 &= 3 \longrightarrow 1 \\
3 \;/\; 2 &= 1 \longrightarrow 1
\end{aligned}
$$

```
242 / 2 = 121  ⟶  0
121 / 2 = 60   ⟶  1
60 / 2 = 30    ⟶  0
30 / 2 = 15    ⟶  0
15 / 2 = 7     ⟶  1
7 / 2 = 3      ⟶  1
3 / 2 = 1      ⟶  1
1 / 2 = 0      ⟶  1
```

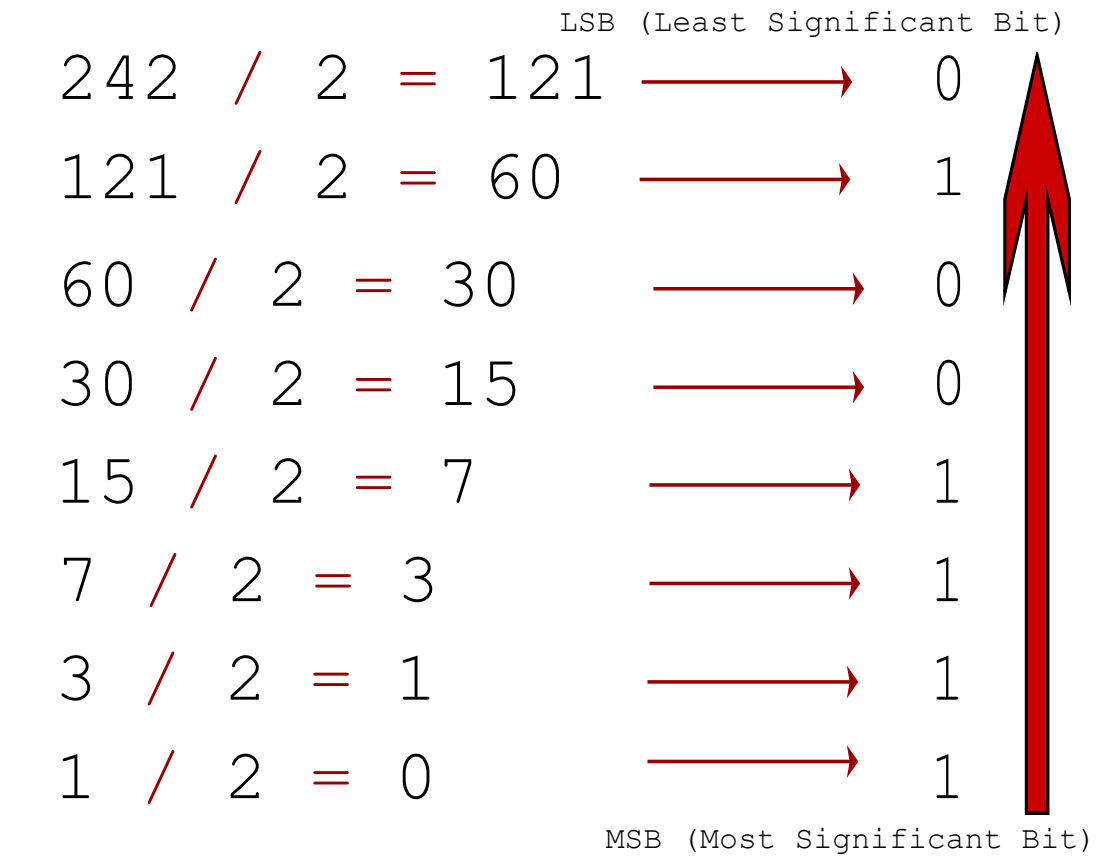

LSB (Least Significant Bit)

```
242 / 2 = 121  ⟶  0
121 / 2 = 60   ⟶  1
60 / 2 = 30    ⟶  0
30 / 2 = 15    ⟶  0
15 / 2 = 7     ⟶  1
7 / 2 = 3      ⟶  1
3 / 2 = 1      ⟶  1
1 / 2 = 0      ⟶  1
```

MSB (Most Significant Bit)

You have to read from the bottom of the remainders(MSB) to

the top(LSB) to get the binary equivalent of the integer.



Therefore the binary equivalent for 242 is:
11110010

Coding Time!

You can build your solution based on ***division by 2*** method. Your solution should return the correct binary equivalent of `dec_num` as a string from the `convert_int_to_bin(dec_num)` in order to pass the tests.

Make sure that you use stack while solving this challenge. The `stack.py` has been imported to the code. You can make use of the implementation while coding your solution. Remove the `pass` statement if you start implementing your solution.

Good luck!

Show Hint

main.py

stack.py

```
from stack import Stack

def convert_int_to_bin(dec_num):
  pass
```