

1. A string consists of '0', '1' and '?'. The question mark can be either '0' or '1'. Find all possible combinations for a string.

0011?11?110

```
def main():
    root = Node()
    curr_nodes = [root]
    input = input("Enter a bitstring: ")
    for x in input:
        if (x == '0' or x == '1'):
            push_to_all(curr_nodes, x)

        if (x == '?'):
            split_all_and_init(curr_nodes)
            advance(curr_nodes)

    print_string(root)
```

```
class Node():
    def __init__(self, payload="", left=None, right=None):
        self.payload = payload
        self.left = left
        self.right = right

    def push_to_all(nodes, x):
        for node in nodes:
            node.payload += x
            if node.left is None:
                node.left = Node(payload=node.payload, left=None, right=None)
```

```

for node in nodes:
    node.payload.append(x)

```

```

def split_all_and_init(nodes):
    for node in nodes:
        left = Node(0, None, None)
        right = Node(1, None, None)
        node.left = left
        node.right = right

```

```

def advance(nodes):
    for node in nodes:
        left = node.left
        right = node.right
        nodes.remove(node)
        nodes.append(left)
        nodes.append(right)

```

```

def print_string(root, prev_payload)
    new_payload = prev_payload + root.payload
    if root.left is not None and root.right is not None:
        print_string(root.left, new_payload)
        print_string(root.right, new_payload)
    else:
        print(new_payload)

```

