```
class Stack:
 def __init__(self, max_size):
 self.max_size = max_size # Size of stack
 self.S = [0] * max_size # Stack array
 self.num = 0 # Number of elements in Stack

 def push(self, item):
 if self.num >= self.max_size:
 raise Exception("Stack overflow")
 self.S[self.num] = item
 self.num += 1

 def pop(self):
 if self.num == 0:
 raise Exception("Stack empty")
 self.num -= 1
 return self.S[self.num]

 def top(self):
 if self.num == 0:
 raise Exception("Stack empty")
 return self.S[self.num-1]

 def size(self):
 return self.num
```

```
def is_full(self):
return self.num >= self.max_size

def is_empty(self):
return self.num == 0
```