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Section:H
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Question:

Construct a DFA that accepts a language L over input alphabets a, b such that L is set of all the strings starting with 'aa' and ending with 'aa' or starting with 'bb' and ending with 'bb'.
Example: aababaa, bbabababb,aaaa,bbbb,aaabbbaa

Code:

```
string = input("Enter the string: ")
l=len(string)

DFA = 0

def state01(ch):
    if ch == 'a':
        return 1
    else:
        return 0

def state02(ch):
    if ch == 'b':
        return 2
    else:
        return 0

def state1(ch):
    if ch == 'a':
        return 3
    else:
        return 0

def state2(ch):
    if ch == 'b':
        return 5
    else:
        return 0

def state4(ch):
    if ch == 'a':
        return 6
    else:
        return 0
```

```
def state5(ch):
    if ch == 'a':
        return 7
    else:
        return 0

def state04(ch):
    if ch == 'b':
        return 8
    else:
        return 0

def state05(ch):
    if ch == 'b':
        return 7
    else:
        return 0

if state01(string[0]):
    DFA = 1
else:
    DFA = state02(string[0])

if DFA == 1:
    DFA = state1(string[1])

elif DFA == 2:
    DFA = state2(string[1])

if DFA == 3:
    DFA = state4(string[1-2])

if DFA == 6:
    DFA = state5(string[1-1])

if DFA == 5:
    DFA = state04(string[1-2])

if DFA == 8:
    DFA = state05(string[1-1])

if DFA == 7:
    print("Accepted")
else:
    print("Rejected")
```

Output:

Accepted String:

```
Enter the string: aaabababaa  
Accepted
```

```
Enter the string: bbaaaaaabb  
Accepted
```

Rejected String:

```
Enter the string: aabb  
Rejected
```

```
Enter the string: ababababab  
Rejected
```