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Natural Language Processing Lab

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Importing the Dependencies

```
from statemachine import StateMachine, State
```

Defining the Morphology Generator Class, which inherits from the StateMachine class

```
class MorphologyGenerator(StateMachine):
    root = State('root', initial=True)
    plural = State('plural')
    past_tense = State('past_tense')
    past_participle = State('past_participle')

    to_plural = root.to(plural)
    to_past_tense = root.to(past_tense)
    to_past_participle = root.to(past_participle)
    back_to_root = plural.to(root) | past_tense.to(root) | past_participle.to(root)

    @staticmethod
    def generate_plural(self, word):
        return word + 's'

    @staticmethod
    def generate_past_tense(self, word):
        if word.endswith('e'):
            return word + 'd'
        elif word.endswith(('y', 's', 'z', 'o')):
            return word + 'ed'
        else:
            return word + 'ed'

    @staticmethod
    def generate_past_participle(self, word):
        if word.endswith('e'):
            return word + 'd'
        elif word.endswith(('y', 's', 'z', 'o')):
            return word + 'ed'
        else:
            return word + 'ed'
```

Testing the Morphology Generator Class, by generating the plural, past tense and past participle forms of the word "play".

```
mg = MorphologyGenerator()
word = 'play'

# Generate the plural form of the word
mg.to_plural()

Plural form of "play" is "plays"
Past tense form of "play" is "played"
Past participle form of "play" is "played"
```