EXP-7:Shift reduce parsing

**Aim:** Implementation of Shift Reduce Parsing.

**Procedure:**

* Shift reduce parsing is a process of reducing a string to the start symbol of a grammar.
* Shift reduce parsing uses a stack to hold the grammar and an input tape to hold the string.
* Shift reduce parsing performs the two actions: shift and reduce. That is why it is known as shift reduces parsing.
* At the shift action, the current symbol in the input string is pushed to a stack.
* At each reduction, the symbols will be replaced by the non-terminals. The symbol is the right side of the production and non-terminal is the left side of the production.

**Program:**

# example 2  
# gram = {  
# "E":["2E2","3E3","4"]  
# }  
# starting\_terminal = "E"  
# inp = "2324232$"  
  
  
gram = {  
 "S":["S+S","S\*S","i"]  
}  
starting\_terminal = "S"  
inp = "i+i\*i"  
  
stack = "$"  
print(f'{"Stack": <15}'+"|"+f'{"Input Buffer": <15}'+"|"+f'Parsing Action')  
print(f'{"-":-<50}')  
  
*while True*:  
 action = *True* i = 0  
 *while* i<len(gram[starting\_terminal]):  
 *if* gram[starting\_terminal][i] *in* stack:  
 stack = stack.replace(gram[starting\_terminal][i],starting\_terminal)  
 print(f'{stack: <15}'+"|"+f'{inp: <15}'+"|"+f'Reduce S->{gram[starting\_terminal][i]}')  
 i=-1  
 action = *False* i+=1  
 *if* len(inp)>1:  
 stack+=inp[0]  
 inp=inp[1:]  
 print(f'{stack: <15}'+"|"+f'{inp: <15}'+"|"+f'Shift')  
 action = *False  
  
 if* inp == "$" *and* stack == ("$"+starting\_terminal):  
 print(f'{stack: <15}'+"|"+f'{inp: <15}'+"|"+f'Accepted')  
 *break  
  
 if* action:  
 print(f'{stack: <15}'+"|"+f'{inp: <15}'+"|"+f'Rejected')  
 *break*

**Output:**

C:\Users\hp\AppData\Local\Programs\Python\Python39\python.exe "F:/Python/DAA/Compiler Design/shiftreduceparsing.py"

Stack |Input Buffer |Parsing Action

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$i |+i\*i |Shift

$S |+i\*i |Reduce S->i

$S+ |i\*i |Shift

$S+i |\*i |Shift

$S+S |\*i |Reduce S->i

$S |\*i |Reduce S->S+S

$S\* |i |Shift

$S\* |i |Rejected

Process finished with exit code 0

**Result:**

Shift Reduce Parsing implemented.