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**Algorithm 1** Check if a vertex can be added

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```
1: function ISSAFE( $v, A, path, pos, visited$ )
2:   if  $A[path[pos - 1]][v] = 0$  then
3:     return False
4:   end if
5:   if  $visited[v]$  then
6:     return False
7:   end if
8:   return True
9: end function
```

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**Algorithm 2** Main Calling Function

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```
1: function HAMCYCLE( $A$ )
2:    $path \leftarrow [0]$ 
3:    $visited \leftarrow$  array of False of length  $len(A)$ 
4:    $visited[0] \leftarrow True$ 
5:   if not FINDHAMCYCLE( $A, 1, path, visited$ ) then
6:     print("No Hamiltonian Cycle possible")
7:   end if
8: end function
```

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**Algorithm 3** Find Hamiltonian Cycles in a Graph

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```
1: function FINDHAMCYCLE( $A, pos, path, visited$ )
2:   if  $pos = len(A)$  then
3:     if  $A[path[-1]][path[0]] \neq 0$  then
4:       add 0 to  $path$ 
5:       print  $path$ 
6:       remove last element from  $path$ 
7:       return True
8:     else
9:       return False
10:    end if
11:  end if
12:   $found \leftarrow False$ 
13:  for  $v$  in range( $len(A)$ ) do
14:    if ISSAFE( $v, A, path, pos, visited$ ) then
15:      add  $v$  to  $path$ 
16:       $visited[v] \leftarrow True$ 
17:      if FINDHAMCYCLE( $A, pos + 1, path, visited$ ) then
18:         $found \leftarrow True$ 
19:      end if
20:       $visited[v] \leftarrow False$ 
21:      remove last element from  $path$ 
22:    end if
23:  end for
24:  return  $found$ 
25: end function
```

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