Algorithm 3 : $H_abstraction(init, current_node, dir)$

for node in nodes **do**
  if $getdirection(node) != dir \wedge state(node) ==' open'$ **then**
    add node to opposite nodes list
  end if
end for
$goal = ['1','1','1','1','5','6','7','8','0']$
$map(init) \rightarrow abstractnode$ $(i.e\ Tiles\ 1, 2, 3, 4 \rightarrow\ 1)$
$map(currentnode)\ \rightarrow\ abstract\ node$
for node in opposite open list **do**
  $map(node)\ \rightarrow\ abstract\ node$
end for
phase_1 = phase_1 _abs(current node, opposite open list, dir)
return phase_1