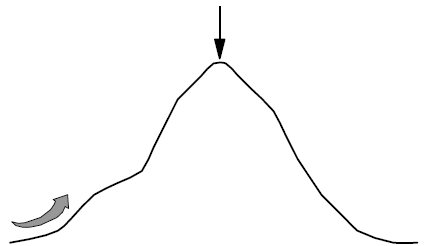
**การค้นหาแบบ HILL-CLIMBING SEARCH**

ฟังก์ชันฮิวริสติกที่นิยมขึ้นในข้างดังนั้น สามารถนำมาช่วยกระบวนการค้นหาเพื่อให้ได้คำตอบ

อย่างรวดเร็วและมีประสิทธิ์ภาพ วิธีการที่จะนำฟังก์ชันฮิวริสติกมาใช้มีหลายวิธีด้วยกันขึ้นอยู่กับว่าจะใช้

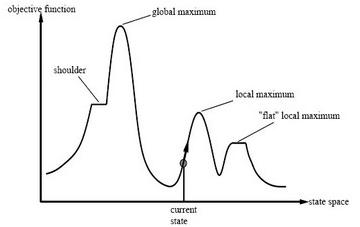
ในลักษณะใด เช่นเลือกสถานะที่มีค่าฮิวริสติกดีขึ้น แล้วเดินไปยัง สถานะนั้นเลยโดยไม่ต้องสนใจสถานะ

ที่มีฮิวริสติกแย่ลง แล้วพิจารณาสถานะเหล่านี้ทีหลัง เป็นต้นในส่วนต่อไปนี้จะกล่าวถึงอัลกอริทึมต่างๆ

ที่นำฟังก์ชันฮิวริสติกมาช่วยในการค้นหาคำตอบ โดยเริ่มจากอัลกอริทึมปีนเขา

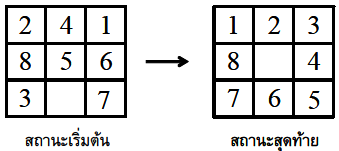
**รูปอัลกอริทึมปีนเขา**

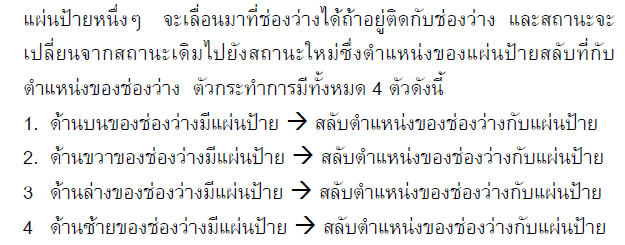
การค้นหาแบบนี้เปรียบเสมือนการปืนไปสู่ยอดเขา ชึ่งอัลกอริทึมจะขึ้นในแนวดิ่งตลอด ถ้าเจอทางแยกเราก็จะไปแยกที่ตรงดิ่งขึ้นไปจนกระทั่งถึงยอดเขาความสูงจากฐานภูเขาจนถึงตำแหน่งที่อยู่ในปัจจุบันก็จะเปรียบเหมือนค่าฮิวริสติกชื่งในที่นี้ยิ่งมากยิ่งดี



**รูป อัลกอริทึมปีนเขา**

- จะค้นหาโดยเลือกสถานะที่มีค่า Heuristic ที่ดีไปเรื่อยๆ จนกว่าจะพบสถานะเป้าหมายที่ต้องการ   
เปรียบเสมือนกับการปีนเขา นักปีนเขาจะเลือกหาเส้นทางเดินขึ้นไปจนกว่าจะพบยอดเขาสูงสุด  
- ข้อเสียวิธีนี้ คือ ห้ามเดินย้อนกลับไปสู่สถานะก่อนหน้า และห้ามเลือกเส้นทางสถานะที่มีค่า Heuristic แย่  
ลงกว่าเดิม





**โฟลว์ชาร์ตโปรแกรม**



**โค้ดโปรแกรม HILL-CLIMBING SEARCH**

Public Class Form1

Dim num As Integer

Dim num2 As Integer

Private Sub Form1\_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load

End Sub

Private Sub Button1\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button1.Click

B1.BackColor = Color.Red

B2.BackColor = Color.Red

B3.BackColor = Color.Red

B4.BackColor = Color.Red

B9.BackColor = Color.Red

B6.BackColor = Color.Red

B7.BackColor = Color.Red

B8.BackColor = Color.Red

B5.BackColor = Color.White

B3.Text = "3"

B4.Text = "8"

B1.Text = "1"

B2.Text = "2"

B5.Text = " "

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B5.BackColor = Color.White

num = 0

num2 = 0

Button4.Enabled = False

End Sub

Private Sub Button3\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button3.Click

Button4.Enabled = True

B1.BackColor = Color.Red

B2.BackColor = Color.Red

B3.BackColor = Color.Red

B4.BackColor = Color.Red

B5.BackColor = Color.Red

B6.BackColor = Color.Red

B7.BackColor = Color.Red

B8.BackColor = Color.Red

B9.BackColor = Color.Red

If num = 0 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "7"

B5.Text = "4"

B6.Text = " "

B7.Text = "6"

B8.Text = "8"

B9.Text = "5"

B6.BackColor = Color.White

End If

If num = 1 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = " "

B4.Text = "7"

B5.Text = "8"

B6.Text = "3"

B7.Text = "6"

B8.Text = "5"

B9.Text = "4"

B3.BackColor = Color.White

End If

If num = 2 Then

B1.Text = "2"

B2.Text = "8"

B3.Text = "3"

B4.Text = "1"

B5.Text = "6"

B6.Text = "4"

B7.Text = "7"

B8.Text = " "

B9.Text = "5"

B8.BackColor = Color.White

End If

If num = 3 Then

B1.Text = "1"

B2.Text = " "

B3.Text = "3"

B4.Text = "8"

B5.Text = "2"

B6.Text = "5"

B7.Text = "7"

B8.Text = "4"

B9.Text = "6"

B2.BackColor = Color.White

End If

If num = 4 Then

B1.Text = "1"

B2.Text = "3"

B3.Text = "4"

B4.Text = "8"

B5.Text = "6"

B6.Text = "2"

B7.Text = " "

B8.Text = "7"

B9.Text = "5"

B7.BackColor = Color.White

End If

If num = 4 Then

num = -1

End If

num = num + 1

num2 = 0

End Sub

Private Sub Button4\_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Button4.Click

B1.BackColor = Color.Red

B2.BackColor = Color.Red

B3.BackColor = Color.Red

B4.BackColor = Color.Red

B5.BackColor = Color.Red

B6.BackColor = Color.Red

B7.BackColor = Color.Red

B8.BackColor = Color.Red

B9.BackColor = Color.Red

num2 = num2 + 1

If num = 1 Then

If num2 = 1 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "7"

B5.Text = " "

B6.Text = "4"

B7.Text = "6"

B8.Text = "8"

B9.Text = "5"

B5.BackColor = Color.White

End If

If num2 = 2 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "7"

B5.Text = "8"

B6.Text = "4"

B7.Text = "6"

B8.Text = " "

B9.Text = "5"

B8.BackColor = Color.White

End If

If num2 = 3 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "7"

B5.Text = "8"

B6.Text = "4"

B7.Text = " "

B8.Text = "6"

B9.Text = "5"

B7.BackColor = Color.White

End If

If num2 = 4 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = " "

B5.Text = "8"

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B4.BackColor = Color.White

End If

If num2 = 5 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = " "

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B5.BackColor = Color.White

End If

If num2 > 5 Then

B5.BackColor = Color.White

End If

End If

If num = 2 Then

If num2 = 1 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "7"

B5.Text = "8"

B6.Text = " "

B7.Text = "6"

B8.Text = "5"

B9.Text = "4"

B6.BackColor = Color.White

End If

If num2 = 2 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "7"

B5.Text = "8"

B6.Text = "4"

B7.Text = "6"

B8.Text = "5"

B9.Text = " "

B9.BackColor = Color.White

End If

If num2 = 3 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "7"

B5.Text = "8"

B6.Text = "4"

B7.Text = "6"

B8.Text = " "

B9.Text = "5"

B8.BackColor = Color.White

End If

If num2 = 4 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "7"

B5.Text = "8"

B6.Text = "4"

B7.Text = " "

B8.Text = "6"

B9.Text = "5"

B7.BackColor = Color.White

End If

If num2 = 5 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = " "

B5.Text = "8"

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B4.BackColor = Color.White

End If

If num2 = 6 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = " "

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B5.BackColor = Color.White

End If

If num2 > 6 Then

B5.BackColor = Color.White

End If

If num = 3 Then

If num2 = 1 Then

B1.Text = "2"

B2.Text = "8"

B3.Text = "3"

B4.Text = "1"

B5.Text = " "

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B5.BackColor = Color.White

End If

If num2 = 2 Then

B1.Text = "2"

B2.Text = " "

B3.Text = "3"

B4.Text = "1"

B5.Text = "8"

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B2.BackColor = Color.White

End If

If num2 = 3 Then

B1.Text = " "

B2.Text = "2"

B3.Text = "3"

B4.Text = "1"

B5.Text = "8"

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B1.BackColor = Color.White

End If

If num2 = 4 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = " "

B5.Text = "8"

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B4.BackColor = Color.White

End If

If num2 = 5 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = " "

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B5.BackColor = Color.White

End If

If num2 > 5 Then

B5.BackColor = Color.White

End If

End If

If num = 4 Then

If num2 = 1 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = " "

B6.Text = "5"

B7.Text = "7"

B8.Text = "4"

B9.Text = "6"

B5.BackColor = Color.White

End If

If num2 = 2 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = "4"

B6.Text = "5"

B7.Text = "7"

B8.Text = " "

B9.Text = "6"

B8.BackColor = Color.White

End If

If num2 = 3 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = "4"

B6.Text = "5"

B7.Text = "7"

B8.Text = "6"

B9.Text = " "

B9.BackColor = Color.White

End If

If num2 = 4 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = "4"

B6.Text = " "

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B6.BackColor = Color.White

End If

If num2 = 5 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = " "

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B5.BackColor = Color.White

End If

If num2 > 5 Then

B5.BackColor = Color.White

End If

End If

If num = 0 Then

If num2 = 1 Then

B1.Text = "1"

B2.Text = "3"

B3.Text = "4"

B4.Text = "8"

B5.Text = "6"

B6.Text = "2"

B7.Text = "7"

B8.Text = " "

B9.Text = "5"

B8.BackColor = Color.White

End If

If num2 = 2 Then

B1.Text = "1"

B2.Text = "3"

B3.Text = "4"

B4.Text = "8"

B5.Text = " "

B6.Text = "2"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B5.BackColor = Color.White

End If

If num2 = 3 Then

B1.Text = "1"

B2.Text = "3"

B3.Text = "4"

B4.Text = "8"

B5.Text = "2"

B6.Text = " "

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B6.BackColor = Color.White

End If

If num2 = 4 Then

B1.Text = "1"

B2.Text = "3"

B3.Text = " "

B4.Text = "8"

B5.Text = "2"

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B3.BackColor = Color.White

End If

If num2 = 5 Then

B1.Text = "1"

B2.Text = " "

B3.Text = "3"

B4.Text = "8"

B5.Text = "2"

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B2.BackColor = Color.White

End If

If num2 = 6 Then

B1.Text = "1"

B2.Text = "2"

B3.Text = "3"

B4.Text = "8"

B5.Text = " "

B6.Text = "4"

B7.Text = "7"

B8.Text = "6"

B9.Text = "5"

B5.BackColor = Color.White

End If

If num2 > 6 Then

B5.BackColor = Color.White

End If

End If

End Sub

End Class

ผลการรันโปรแกรม

ผาผลการรันโปรแกรม

