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A →	B	C ✓
D ↓	E	F
G ✓	H	I ✓

Step 1:

	$V_k(G)$	$V_{k+1}(F)$
A	0	-1
B	0	-1
D	0	-1
F	0	-1
F	0	-1
H	0	-1

1. $V_{k+1}(A) = \frac{1}{4}[(-1+V_{k+1}(A)) + (-1+V_{k+1}(B)) + (-1+V_{k+1}(D)) + (-1+V_{k+1}(A))]$
   $V_{k+1}(A) = \frac{1}{4}[(-1+0) + (-1+0) + (-1+0) + (-1+0)]$
   $V_{k+1}(A) = -1$

2. $V_{k+1}(B) = \frac{1}{4}[(-1+V_{k+1}(A)) + (-1+V_{k+1}(C)) + (-1+V_{k+1}(E)) + (-1+V_{k+1}(B))]$
   $V_{k+1}(B) = \frac{1}{4}[(-1+0) + (-1+0) + (-1+0) + (-1+0)]$
   $V_{k+1}(B) = -1$

3. $V_{k+1}(D) = \frac{1}{4}[(-1+V_{k+1}(D)) + (-1+V_{k+1}(E)) + (-1+V_{k+1}(G)) + (-1+V_{k+1}(A))]$
   $V_{k+1}(D) = \frac{1}{4}[(-1+0) + (-1+0) + (-1+0) + (-1+0)]$
   $V_{k+1}(D) = -1$

4. $V_{k+1}(E) = \frac{1}{4}[(-1+V_{k+1}(D)) + (-1+V_{k+1}(F)) + (-1+V_{k+1}(H)) + (-1+V_{k+1}(B))]$
   $V_{k+1}(E) = \frac{1}{4}[(-1+0) + (-1+0) + (-1+0) + (-1+0)]$
   $V_{k+1}(E) = -1$

5. $V_{k+1}(F) = \frac{1}{4}[(-1+V_{k+1}(E)) + (-1+V_{k+1}(F)) + (-1+V_{k+1}(I)) + (-1+V_{k+1}(C))]$
   $V_{k+1}(F) = \frac{1}{4}[(-1+0) + (-1+0) + (-1+0) + (-1+0)]$

6. $V_{k+1}(F) = -1$

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6. $V_{k+1}(H) = \frac{1}{4}[(-1+V_{k+1}(G)) + (-1+V_{k+1}(I)) + (-1+V_{k+1}(H)) + (-1+V_{k+1}(E))]$

$V_{k+1}(H) = \frac{1}{4}[(-1+0) + (-1+0) + (-1+0) + (-1+0)]$

$V_{k+1}(H) = -1$

7.

-1	-1	0
-1	-1	-1
0	-1	0

8. $q_{k+1}(A, \text{LEFT}) = -2$
9. $q_{k+1}(A, \text{RIGHT}) = -2$
10. $q_{k+1}(A, \text{UP}) = -2$
11. $q_{k+1}(A, \text{DOWN}) = -2$
12. $\pi_{k+1}(A) = \{\text{LEFT, RIGHT, UP, DOWN}\}$
13. $q_{k+1}(B, \text{LEFT}) = -2$
14. $q_{k+1}(B, \text{RIGHT}) = -1$
15. $q_{k+1}(B, \text{UP}) = -2$
16. $q_{k+1}(B, \text{DOWN}) = -2$
17. $\pi_{k+1}(B) = \{\text{RIGHT}\}$
18. $q_{k+1}(D, \text{LEFT}) = -2$
19. $q_{k+1}(D, \text{RIGHT}) = -2$
20. $q_{k+1}(D, \text{UP}) = -2$
21. $q_{k+1}(D, \text{DOWN}) = -1$
22. $\pi_{k+1}(D) = \{\text{DOWN}\}$
23. $q_{k+1}(E, \text{LEFT}) = -2$
24. $q_{k+1}(E, \text{RIGHT}) = -2$
25. $q_{k+1}(E, \text{UP}) = -2$
26. $q_{k+1}(E, \text{DOWN}) = -2$
27. $\pi_{k+1}(E) = \{\text{LEFT, RIGHT, UP, DOWN}\}$
28. $q_{k+1}(F, \text{LEFT}) = -2$
29. $q_{k+1}(F, \text{RIGHT}) = -2$
30. $q_{k+1}(F, \text{UP}) = -1$
31. $q_{k+1}(F, \text{DOWN}) = -1$
32. $\pi_{k+1}(F) = \{\text{UP, DOWN}\}$

33. $q_{k+1}(H, \text{LEFT}) = -1$

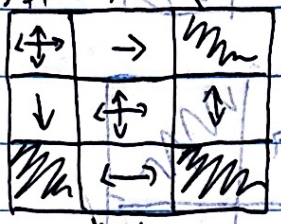
34. $q_{k+1}(H, \text{RIGHT}) = -1$

35. $q_{k+1}(H, \text{UP}) = -2$

36. $q_{k+1}(H, \text{DOWN}) = -2$

37. $\pi_{k+1}(H) = \{\text{LEFT}, \text{RIGHT}\}$

38.



39. $V_*(A) = \frac{1}{4}[(-1 + V_{k+2}(A)) + (-1 + V_{k+2}(B)) + (-1 + V_{k+2}(D)) + (-1 + V_{k+2}(A))]$

$V_*(A) = \frac{1}{4}[(-1 + -1) + (-1 + -1) + (-1 + -1) + (-1 + -1)]$

$V*(A) = -2$

40. $V_*(B) = \frac{1}{4}[(-1 + V_{k+2}(A)) + (-1 + V_{k+2}(C)) + (-1 + V_{k+2}(E)) + (-1 + V_{k+2}(B))$

$V_*(B) = \frac{1}{4}[(-1 + -1) + (-1 + 0) + (-1 + -1) + (-1 + -1)]$

$V*(B) = -1.75$

41. $V_*(D) = \frac{1}{4}[(-1 + V_{k+2}(D)) + (-1 + V_{k+2}(E)) + (-1 + V_{k+2}(G)) + (-1 + V_{k+2}(A))]$

$V_*(D) = \frac{1}{4}[(-1 + -1) + (-1 + -1) + (-1 + 0) + (-1 + -1)]$

$V_*(D) = -1.75$

42. $V_*(E) = \frac{1}{4}[(-1 + V_{k+2}(D)) + (-1 + V_{k+2}(F)) + (-1 + V_{k+2}(H)) + (-1 + V_{k+2}(B))]$

$V_*(E) = \frac{1}{4}[(-1 + -1) + (-1 + -1) + (-1 + -1) + (-1 + -1)]$

$U_*(E) = -2$

43. $V_*(F) = \frac{1}{4}[(-1 + V_{k+2}(E)) + (-1 + V_{k+2}(F)) + (-1 + V_{k+2}(I)) + (-1 + V_{k+2}(C))]$

$V_*(F) = \frac{1}{4}(-1 + -1) + (-1 + -1) + (-1 + 0) + (-1 + 0)$

$U_*(F) = -1.5$

44. $V_*(H) = \frac{1}{4}[(-1 + V_{k+2}(G)) + (-1 + V_{k+2}(I)) + (-1 + V_{k+2}(H)) + (-1 + V_{k+2}(E))$

$U_*[H) = \frac{1}{4}(-1 + 0) + (-1 + 0) + (-1 + -1) + (-1 + -1)$

45. $q_{k+2}(A, \text{LEFT}) = -4$

$q_{k+2}(A, \text{RIGHT}) = -3.75$

$q_{k+2}(A, \text{UP}) = -4$

$q_{k+2}(A, \text{DOWN}) = -3.75$

$\pi_{k+2}(A) = \{\text{RIGHT}, \text{DOWN}\}$

46. $q_{k+2}(B, \text{LEFT}) = -3.75$

$q_{k+2}(B, \text{RIGHT}) = -1.75$

$q_{k+2}(B, \text{UP}) = -3.5$

$q_{k+2}(B, \text{DOWN}) = -3.75$

$\pi_{k+2}(B) = \{\text{RIGHT}\}$

47. $q_{k+2}(D, \text{LEFT}) = -3.5$

$q_{k+2}(D, \text{RIGHT}) = -3.75$

$q_{k+2}(D, \text{UP}) = -3.75$

$q_{k+2}(D, \text{DOWN}) = -1.75$

$\pi_{k+2}(D) = \{\text{DOWN}\}$

48. $q_{k+2}(E, \text{LEFT}) = -3.75$

$q_{k+2}(E, \text{RIGHT}) = -3.5$

$q_{k+2}(E, \text{UP}) = -3.75$

$q_{k+2}(E, \text{DOWN}) = -3.5$

$\pi_{k+2}(E) = \{\text{RIGHT}, \text{DOWN}\}$

49 $q_{k+2}(F, \text{LEFT}) = -3.5$

$q_{k+2}(F, \text{RIGHT}) = -3$

$q_{k+2}(F, \text{UP}) = -1.5$

$q_{k+2}(F, \text{DOWN}) = -1.5$

$\pi_{k+2}(F) = \{\text{UP}, \text{DOWN}\}$

50. $q_{k+2}(H, \text{LEFT}) = -1.5$

$q_{k+2}(H, \text{RIGHT}) = -1.5$

$q_{k+2}(H, \text{UP}) = -3$

$q_{k+2}(H, \text{DOWN}) = -3$

$\pi_{k+2}(H) = \{\text{LEFT}, \text{RIGHT}\}$

51. $\pi^*(A) = \{\text{RIGHT}, \text{DOWN}\}$

52 $\pi^*(B) = \{\text{RIGHT}\}$

53 $\pi^*(D) = \{\text{DOWN}\}$

54 $\pi^*(E) = \{\text{RIGHT}, \text{DOWN}\}$

55 $\pi^*(F) = \{\text{UP}, \text{DOWN}\}$

56 $\pi^*(H) = \{\text{LEFT}, \text{RIGHT}\}$

57.

-2	-1.75	
-1.75	-2	-1.5
	-1.5	

58.