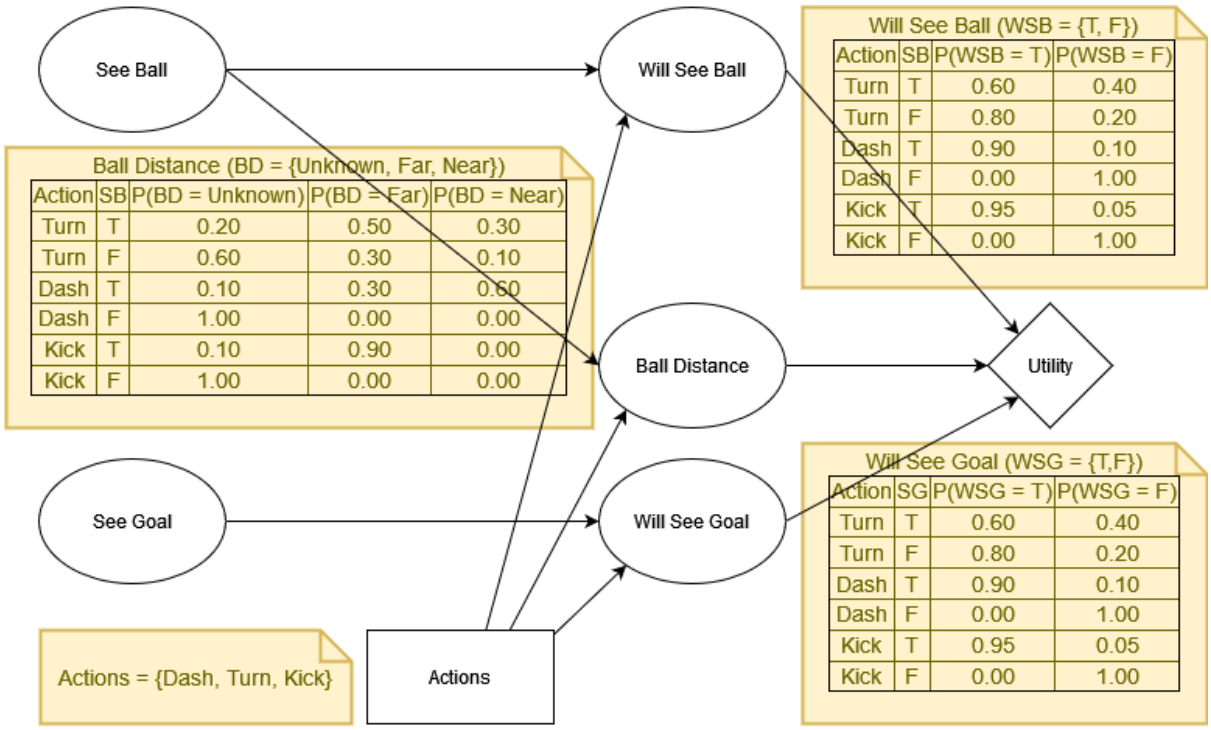
SYSC5103 Assignment 2 - Question 2

Decision Network Diagram:



Expected Utility Formula:

$$EU(A = a) = \Sigma_{E=\{WSB,WSG,BD\}} (w_E * \Sigma_{SB=\{T,F\},SG=\{T,F\}} (P(E/ A = a, SB = sb, SG = sg) * U(E)))$$

U(E) =
- if WSB = T then 1.0
- If WSB = F then -1.0
- If WSG = T then 1.0
- If WSG = F then -1.0
- If BD = Unknown then 0
- If BD = Far then 0.5
- If BD = Near then 1.0

W =
- 0.1 if WSB
- 0.4 if WSG
- 0.5 if BD

Above W_E = weight,
U()= utility function for environment,
EU() = expected utility of action,
{SB,SG} are the evidence and
{WSB,WSG,BD} are the environment.

Evidence Introduction:

SB = T, SG = T
- EU(Kick/SB = T, SG =T) = 0.375
- EU(Dash/SB = T, SG =T) = 0.775
- EU(Kick/SB = T, SG =T) = 0.675
- => Dash

SB = T
- EU(Kick/SB = T) = 0.615
- EU(Dash/SB = T) = 0.055
- EU(Kick/SB = T) = -0.085
- => Kick

Note: The calculations were taken from code execution of file “Krislet/DeductiveNetwork.java”. Please read the GitHub page for instructions on how to execute the code to get Expected Utiliy output.

Code Execution: Same as Krizlet.

Note:

The GitHub link will provide additional information about the agent execution.