Since, it is given that opponent is equally likely to be a beginner, intermediate or a master. Therefore,

P(Beginner) =

P(Intermediate) =

P(Master) =

Probability of winning a game depending on opponent types is 0.90, 0.50 or 0.30

1. Probability of winning a first game P(W1)

1. We need to compute probability of winning second game given first game won i.e. P(W2|W1) = P(W2 ,W1)/P(W1)

Since, winning of game 2 is totally an independent event from winning a game 1.Therefore,

Therefore,

1. Conditional independence is where all probabilities are conditional on the opponent’s skill level. Conditional independence give more useful assumption here because winning the first game gives more information about the opponent’s skill level, which in turn gives information about the result of the second game. Whereas Independence here means that knowing one game’s outcome gives no information about the other game’s outcome.