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outcome :-> Result of random experiment roll a die-HT
events: is a collection of out comes
sample space set of all possible outcomes
2 moist E
 1- P(A) ≥0
 2- P (N)=P(S)=1
 3 - A1, A2... An are disjoint events
   P(A1 U A2 ... UAn) = P(A1) + P(A2) ... P(An)
 1-) P(A) = 1 - P(A)
                                         4-) P(A-B) = P(A)-P(A)B)
    OA AUA = 1 P(A)+P(A')= 1
                                          A=(A) O(A-B) P(A)-P(A)D)+P(A-B)
                                          P (A=B-P(A) - P(A)B)
 2-) P(B)=0
                                        5) P(AUB) = P(A)+P(D-P(A)B)
 P(0)= P(1) -> 1- P(1) =0
 3-) P(A) < 1
   P(A) = 1 - P(A') \rightarrow P(A) \leq 1
\geq 0
  Axioms are important
La Rules of prob. or obtained using these axioms.
  Laking function that me these axioms define a prob. ne asore
  Culculating prob
 47 Equially likely outcomes.
   -Rolling a die
    1 = { 1,2,34,3,6} ->P(1) =P(2)=P(3) =P(4)=P(3)=P(6)=1
    Rolling a fair die and get an odd numbers ?
     P(012) = {1] + {2} +{2} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{1}{2}
      Conditional probability (kosullu olasılık) condicion Tkosul
      P(rain)=7 p(rain)=0.4
     -> Clouds in the sky -> P(rain) = 0.85
      P(rain) clouds) = 0.75
      Definition: The conditional probability P(A/B) prob. that A occurred given I has
     occured is: P(A/B) = P(A/B)
     ExiRolla fair die
      prob. of getting an even number?
     given the outcome is less then or equal to 3 -> P(even /outcome < 3)
       1=1,2,3 P(even) = {2} -> 1
      ex Flight we know that 90% of the flight deports on 61mo
      80% of the flights arrive on sine
      70% of the flights both arrive and depart on timo
     a) We know that plight departed on time. Prop. that it will arrive on time.
                 P(A) = 70% P(1/4) = 70 = 7
     b) 11 11 11 arrived " " . " 1 1 -1 depart 11 ")
               P(B) = 80% -> P(A/B) = +0 = +
     if there are more than 2 events 7
         P(rais/clouds, windy)=?
     Chain rule
                                               A
     P(ANB) = P(AB). P(B) -> cond. prob.
    P( ANBNC) = P(C). P(B/C). P(A/B/C)
                                                WILLY &
    independence of events
    definition >> 2 events A and B are independent iff (=>
            P ( A / B) = P( A )
                    it is independent of ]
           P(Anb) = P(A), P(B)

A: rain

P(rain (T))

B: flip a coin

A IT
                                   P(A/U) = P(A\cap B)
P(B) = P(A) P(B) = P(A\cap B)
     Baginsiz blaglar agrik blindt
                                 independent events are not disjoint
     Zorunda degill TY
    Ex/: I roll a lie and observe number X. Let A be an every that x is
    an even number and let b be an event that X > 4
      Are A and B independent?
          A {2,4,6} B {5,6} P(A) = \frac{1}{2} P(B) = \frac{1}{3}
            P(A \cap B) = \frac{1}{6} \frac{1}{6} = \frac{1}{2} \cdot \frac{1}{3} = \frac{1}{6} \Rightarrow Events A an B independent
                            KAND ? PLA). P(B)
   Flight example
   P(A) = 80% P(D) = 90% P(AND) = 70% Are A and D independent?
                 4, 9=7 7 10 -> 18 + 7 events A and B are not independent
                                       11 11 11 11 11 11 12
   0~ P(A1D)=P(A) -> \frac{70.6}{90.6} \neq 8000
  @ P(D/A) = P(D) -> 10% + 90%
  independence of I events
   P(A) = P(A), P(B) P(A) P(B) P(B), P(O)
   P(AMBMC) = P(A).P(B).P(C) Ise A,B und C are independent
   Conditional in dependent
   Two event A and B are Conditionally independent
    yiven ( iff
      P(An B/C) = P(B/C) . P(A/C)
   law of Estal probability
   Let B1, B2, ..., Bn be a (Partition) BOB2 ... Bn=R
                                             B11B=8
   of N and P(B_i) > 0
   Fer any event A we have
    P(A) = \leq P(A/B;) P(B;)
                (AND) WA NB) U(A NB) = P(A)
   ex [000] 3 un fair coins we know that - for coin 1 P(H)=0.9
      draw a coin randomly and we flip P(H)=7
                        P(A) = P(A \cap B_i) = P(A \cap B_i) \cdot P(B_i)
                            =0.9.\frac{1}{1}+0.6.\frac{1}{1}+0.3.1=0.6
   Bages Role
                        P(B/A)= P(A)AD)
    P(A/B) = PCA/B)
      -> P(A/B).P(B) = P(B/A), P(A) - [P(A/B) = P(B/A).P(A)
                                                  PC B)
    expif we get H, what
                      P(C_1/H) = P(H/C_1) \cdot P(C_1) = \frac{1}{2}
P(H)
    is the prob, we draw the
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Random experiment: Roll a die, HT