```
E\left[\left(m_{j}-E[m_{j}]\right)^{2}\right] = O_{j}(1-O_{j})^{2} + (1-O_{j})(0-O_{j})^{2}
= O_{j}(1-O_{j})^{2} + (1-O_{j})O_{j}^{2}
= 1-O_{j}(O_{j}-O_{j}^{2}+O_{j}^{2}) = (O_{j}(1-O_{j})
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Ia) y = 5 m w x; , m ~ Bernoulli (O) eg P(m=1) = O; P(m=0)=
                        E[m] = 0; , Var(m;) = (0;)(1-0;)
    E[Y] = E[ZmiWiX]
     = INIX; E[m]] = INIX; O; = IZWIX
   Var[y] = = wixivarimi] - by indep of each example
= = = wixivarimi] = + = wixi = n
 b) Clearly Wy - 1/2 (Recall: Var(aX) = a2Var(X))
 c) F = 1/2 \(\ti \text{E[(yi-ti)^2]}
    = = ZWiX;
     Alsa: Var (X) = E[X] - (E[X])2
      : E[Y2] = Var(Y) + (E[Y])2
    Note: Xi depends on i so
                   cannot be fectored out.
```

