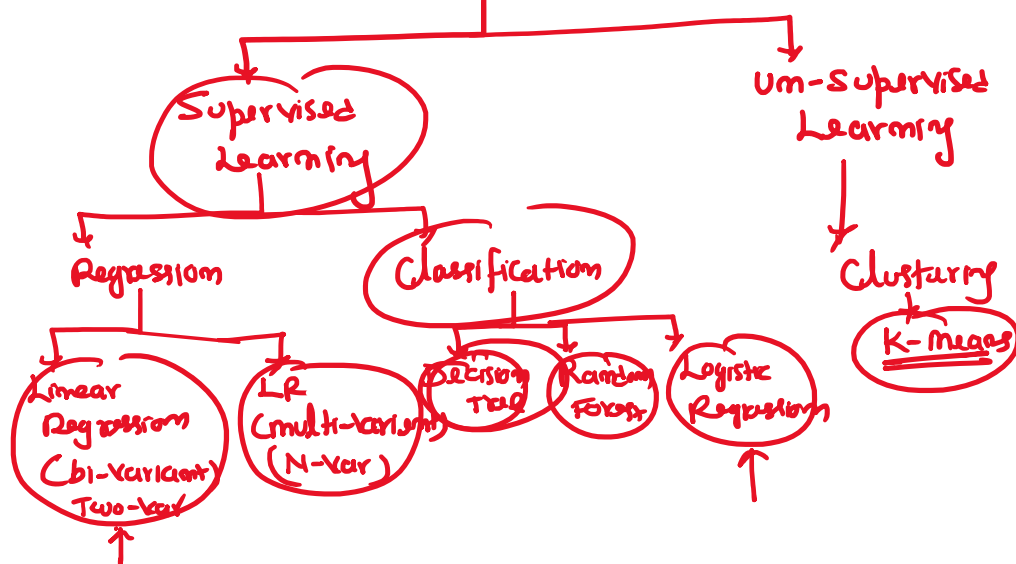
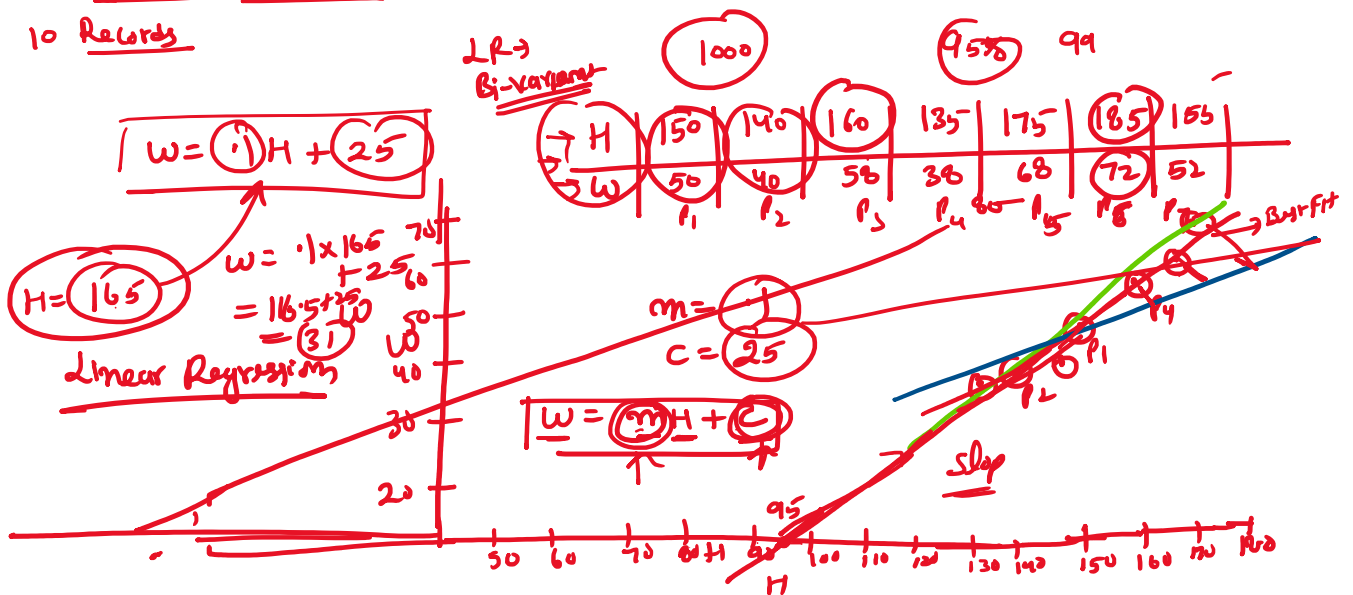


Day-2ML - AlgorithmsLinear Regression

10 Records



$$y = a_1x_1 + a_2x_2 + a_3$$

$$m = .727$$

$$C = -61.28$$

$$W = .727 \times 165 - 61.28$$

$$= 59$$

$$W = .727 \times H - 61.28$$

$$W = .727 \times 160 - 61.28 = 56$$

$$W = .727 \times 185 - 61.28 = 73$$

LR (multi-variant)

$$Y = a_1x_1 + a_2x_2 + a_3x_3 + C$$

$y = ax + c$ \rightarrow Linear

$ax^2 + bx + c$ \rightarrow Quadratic

$ax^3 + bx^2 + cx + d$ \rightarrow Cubic

$ax^4 + bx^3 + cx^2 + dx + e$ \rightarrow Quartic

$ax^5 + bx^4 + cx^3 + dx^2 + ex + f$ \rightarrow Quintic

$ax^6 + bx^5 + cx^4 + dx^3 + ex^2 + fx + g$ \rightarrow Sextic

$ax^7 + bx^6 + cx^5 + dx^4 + ex^3 + fx^2 + gx + h$ \rightarrow Septic

$ax^8 + bx^7 + cx^6 + dx^5 + ex^4 + fx^3 + gx^2 + hx + i$ \rightarrow Octic

$ax^9 + bx^8 + cx^7 + dx^6 + ex^5 + fx^4 + gx^3 + hx^2 + ix + j$ \rightarrow Nonic

$ax^{10} + bx^9 + cx^8 + dx^7 + ex^6 + fx^5 + gx^4 + hx^3 + ix^2 + jx + k$ \rightarrow Decic

$ax^{11} + bx^{10} + cx^9 + dx^8 + ex^7 + fx^6 + gx^5 + hx^4 + ix^3 + jx^2 + kx + l$ \rightarrow Undecimic

$ax^{12} + bx^{11} + cx^{10} + dx^9 + ex^8 + fx^7 + gx^6 + hx^5 + ix^4 + jx^3 + kx^2 + lx + m$ \rightarrow Duodecimic

$ax^{13} + bx^{12} + cx^{11} + dx^{10} + ex^9 + fx^8 + gx^7 + hx^6 + ix^5 + jx^4 + kx^3 + lx^2 + mx + n$ \rightarrow Tredecimic

$ax^{14} + bx^{13} + cx^{12} + dx^{11} + ex^{10} + fx^9 + gx^8 + hx^7 + ix^6 + jx^5 + kx^4 + lx^3 + mx^2 + nx + o$ \rightarrow Quattuordecimic

$ax^{15} + bx^{14} + cx^{13} + dx^{12} + ex^{11} + fx^{10} + gx^9 + hx^8 + ix^7 + jx^6 + kx^5 + lx^4 + mx^3 + nx^2 + ox + p$ \rightarrow Quindecimic

$ax^{16} + bx^{15} + cx^{14} + dx^{13} + ex^{12} + fx^{11} + gx^{10} + hx^9 + ix^8 + jx^7 + kx^6 + lx^5 + mx^4 + nx^3 + ox^2 + px + q$ \rightarrow Sexdecimic

$ax^{17} + bx^{16} + cx^{15} + dx^{14} + ex^{13} + fx^{12} + gx^{11} + hx^{10} + ix^9 + jx^8 + kx^7 + lx^6 + mx^5 + nx^4 + ox^3 + px^2 + qx + r$ \rightarrow Septendecimic

$ax^{18} + bx^{17} + cx^{16} + dx^{15} + ex^{14} + fx^{13} + gx^{12} + hx^{11} + ix^{10} + jx^9 + kx^8 + lx^7 + mx^6 + nx^5 + ox^4 + px^3 + qx^2 + rx + s$ \rightarrow Octodecimic

$ax^{19} + bx^{18} + cx^{17} + dx^{16} + ex^{15} + fx^{14} + gx^{13} + hx^{12} + ix^{11} + jx^{10} + kx^9 + lx^8 + mx^7 + nx^6 + ox^5 + px^4 + qx^3 + rx^2 + sx + t$ \rightarrow Novemdecimic

$ax^{20} + bx^{19} + cx^{18} + dx^{17} + ex^{16} + fx^{15} + gx^{14} + hx^{13} + ix^{12} + jx^{11} + kx^{10} + lx^9 + mx^8 + nx^7 + ox^6 + px^5 + qx^4 + rx^3 + sx^2 + tx + u$ \rightarrow Vigintimic

$ax^{21} + bx^{20} + cx^{19} + dx^{18} + ex^{17} + fx^{16} + gx^{15} + hx^{14} + ix^{13} + jx^{12} + kx^{11} + lx^{10} + mx^9 + nx^8 + ox^7 + px^6 + qx^5 + rx^4 + sx^3 + tx^2 + ux + v$ \rightarrow Vigintiunimic

$ax^{22} + bx^{21} + cx^{20} + dx^{19} + ex^{18} + fx^{17} + gx^{16} + hx^{15} + ix^{14} + jx^{13} + kx^{12} + lx^{11} + mx^{10} + nx^9 + ox^8 + px^7 + qx^6 + rx^5 + sx^4 + tx^3 + ux^2 + vx + w$ \rightarrow Vigintiduumimic

$ax^{23} + bx^{22} + cx^{21} + dx^{20} + ex^{19} + fx^{18} + gx^{17} + hx^{16} + ix^{15} + jx^{14} + kx^{13} + lx^{12} + mx^{11} + nx^{10} + ox^9 + px^8 + qx^7 + rx^6 + sx^5 + tx^4 + ux^3 + vx^2 + wx + x$ \rightarrow Vigintitremimic

$ax^{24} + bx^{23} + cx^{22} + dx^{21} + ex^{20} + fx^{19} + gx^{18} + hx^{17} + ix^{16} + jx^{15} + kx^{14} + lx^{13} + mx^{12} + nx^{11} + ox^{10} + px^9 + qx^8 + rx^7 + sx^6 + tx^5 + ux^4 + vx^3 + wx^2 + yx + z$ \rightarrow Vigintiquatuorimic

$ax^{25} + bx^{24} + cx^{23} + dx^{22} + ex^{21} + fx^{20} + gx^{19} + hx^{18} + ix^{17} + jx^{16} + kx^{15} + lx^{14} + mx^{13} + nx^{12} + ox^{11} + px^{10} + qx^9 + rx^8 + sx^7 + tx^6 + ux^5 + vx^4 + wx^3 + yx^2 + zx + a$ \rightarrow Vigintiquinqueimic

$ax^{26} + bx^{25} + cx^{24} + dx^{23} + ex^{22} + fx^{21} + gx^{20} + hx^{19} + ix^{18} + jx^{17} + kx^{16} + lx^{15} + mx^{14} + nx^{13} + ox^{12} + px^{11} + qx^{10} + rx^9 + sx^8 + tx^7 + ux^6 + vx^5 + wx^4 + yx^3 + zx^2 + ax + b$ \rightarrow Vigintiseptemimic

$ax^{27} + bx^{26} + cx^{25} + dx^{24} + ex^{23} + fx^{22} + gx^{21} + hx^{20} + ix^{19} + jx^{18} + kx^{17} + lx^{16} + mx^{15} + nx^{14} + ox^{13} + px^{12} + qx^{11} + rx^{10} + sx^9 + tx^8 + ux^7 + vx^6 + wx^5 + yx^4 + zx^3 + ax^2 + bx + c$ \rightarrow Vigintioctodecimimic

$ax^{28} + bx^{27} + cx^{26} + dx^{25} + ex^{24} + fx^{23} + gx^{22} + hx^{21} + ix^{20} + jx^{19} + kx^{18} + lx^{17} + mx^{16} + nx^{15} + ox^{14} + px^{13} + qx^{12} + rx^{11} + sx^{10} + tx^9 + ux^8 + vx^7 + wx^6 + yx^5 + zx^4 + ax^3 + bx^2 + cx + d$ \rightarrow Vigintinovemimic

$ax^{29} + bx^{28} + cx^{27} + dx^{26} + ex^{25} + fx^{24} + gx^{23} + hx^{22} + ix^{21} + jx^{20} + kx^{19} + lx^{18} + mx^{17} + nx^{16} + ox^{15} + px^{14} + qx^{13} + rx^{12} + sx^{11} + tx^{10} + ux^9 + vx^8 + wx^7 + yx^6 + zx^5 + ax^4 + bx^3 + cx^2 + dx + e$ \rightarrow Vigintiunimimic

$ax^{30} + bx^{29} + cx^{28} + dx^{27} + ex^{26} + fx^{25} + gx^{24} + hx^{23} + ix^{22} + jx^{21} + kx^{20} + lx^{19} + mx^{18} + nx^{17} + ox^{16} + px^{15} + qx^{14} + rx^{13} + sx^{12} + tx^{11} + ux^{10} + vx^9 + wx^8 + yx^7 + zx^6 + ax^5 + bx^4 + cx^3 + dx^2 + ex + f$ \rightarrow Vigintiduumimimic

$ax^{31} + bx^{30} + cx^{29} + dx^{28} + ex^{27} + fx^{26} + gx^{25} + hx^{24} + ix^{23} + jx^{22} + kx^{21} + lx^{20} + mx^{19} + nx^{18} + ox^{17} + px^{16} + qx^{15} + rx^{14} + sx^{13} + tx^{12} + ux^{11} + vx^{10} + wx^9 + yx^8 + zx^7 + ax^6 + bx^5 + cx^4 + dx^3 + ex^2 + fx + g$ \rightarrow Vigintitremimimic

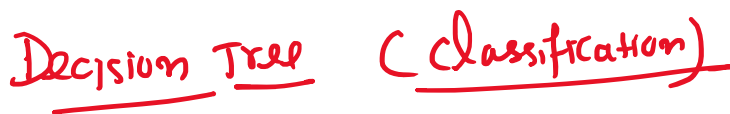
$ax^{32} + bx^{31} + cx^{30} + dx^{29} + ex^{28} + fx^{27} + gx^{26} + hx^{25} + ix^{24} + jx^{23} + kx^{22} + lx^{21} + mx^{20} + nx^{19} + ox^{18} + px^{17} + qx^{16} + rx^{15} + sx^{14} + tx^{13} + ux^{12} + vx^{11} + wx^{10} + yx^9 + zx^8 + ax^7 + bx^6 + cx^5 + dx^4 + ex^3 + fx^2 + gx + h$ \rightarrow Vigintiquatuorimimic

$ax^{33} + bx^{32} + cx^{31} + dx^{30} + ex^{29} + fx^{28} + gx^{27} + hx^{26} + ix^{25} + jx^{24} + kx^{23} + lx^{22} + mx^{21} + nx^{20} + ox^{19} + px^{18} + qx^{17} + rx^{16} + sx^{15} + tx^{14} + ux^{13} + vx^{12} + wx^{11} + yx^{10} + zx^9 + ax^8 + bx^7 + cx^6 + dx^5 + ex^4 + fx^3 + gx^2 + hx + i$ \rightarrow Vigintiquinqueimimic

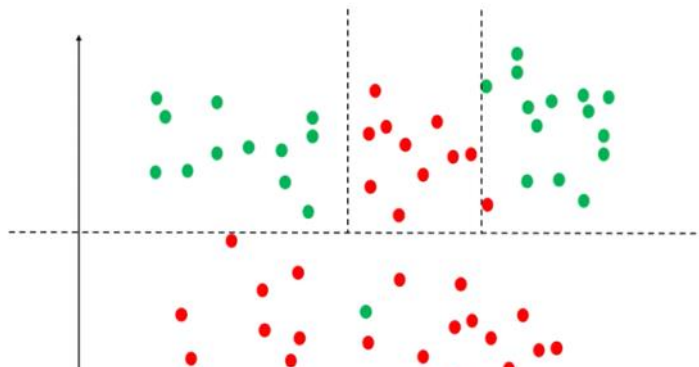
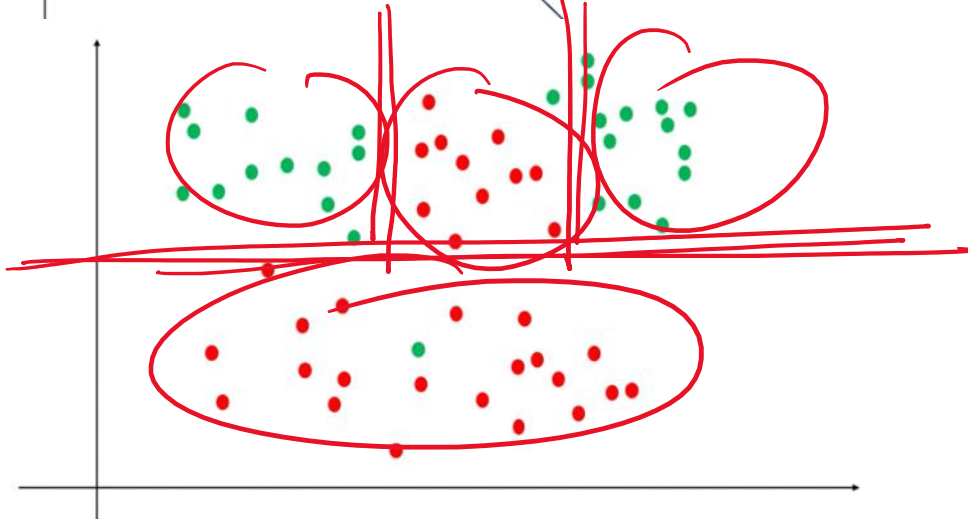
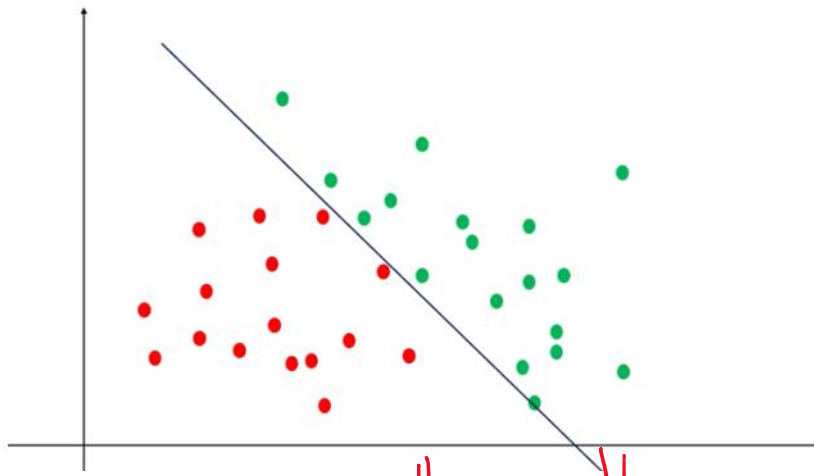
$ax^{34} + bx^{33} + cx^{32} + dx^{31} + ex^{30} + fx^{29} + gx^{28} + hx^{27} + ix^{26} + jx^{25} + kx^{24} + lx^{23} + mx^{22} + nx^{21} + ox^{20} + px^{19} + qx^{18} + rx^{17} + sx^{16} + tx^{15} + ux^{14} + vx^{13} + wx^{12} + yx^{11} + zx^{10} + ax^9 + bx^8 + cx^7 + dx^6 + ex^5 + fx^4 + gx^3 + hx^2 + ix + j$ \rightarrow Vigintiseptemimimic

$ax^{35} + bx^{34} + cx^{33} + dx^{32} + ex^{31} + fx^{30} + gx^{29} + hx^{28} + ix^{27} + jx^{26} + kx^{25} + lx^{24} + mx^{23} + nx^{22} + ox^{21} + px^{20} + qx^{19} + rx^{18} + sx^{17} + tx^{16} + ux^{15} + vx^{14} + wx^{13} + yx^{12} + zx^{11} + ax^{10} +$

$$\begin{aligned} \text{Price} &= 135.787 \times \text{area} + 180616.43 \\ &= 135.787 \times 3200 + 180616.43 \end{aligned}$$



Satur Plot

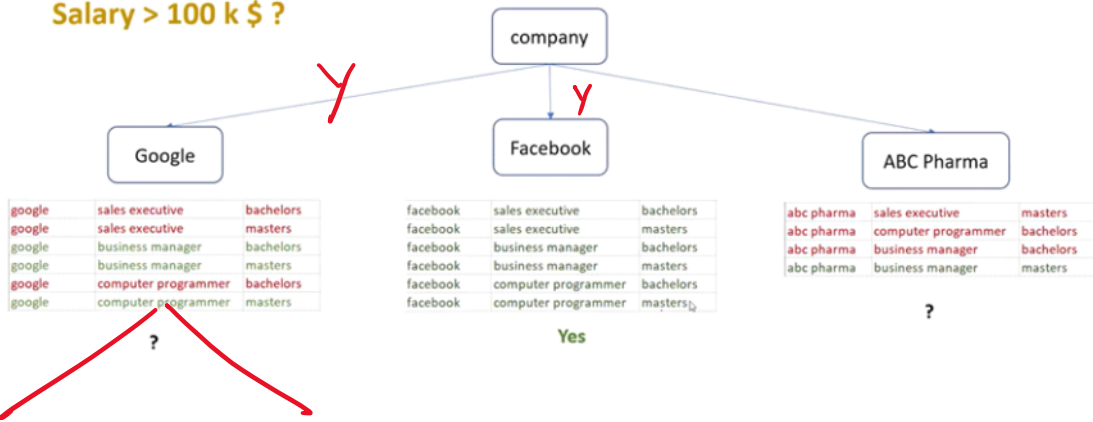


Company	Job	Degree	Salary_more_than_100k
google	sales executive	bachelors	0
google	sales executive	masters	0
google	business manager	bachelors	1
google	business manager	masters	1
google	computer programmer	bachelors	0
google	computer programmer	masters	1
abc pharma	sales executive	masters	0
abc pharma	computer programmer	bachelors	0
abc pharma	business manager	bachelors	0
abc pharma	business manager	masters	1
facebook	sales executive	bachelors	1
facebook	sales executive	masters	1
facebook	business manager	bachelors	1
facebook	business manager	masters	1
facebook	computer programmer	bachelors	1
facebook	computer programmer	masters	1

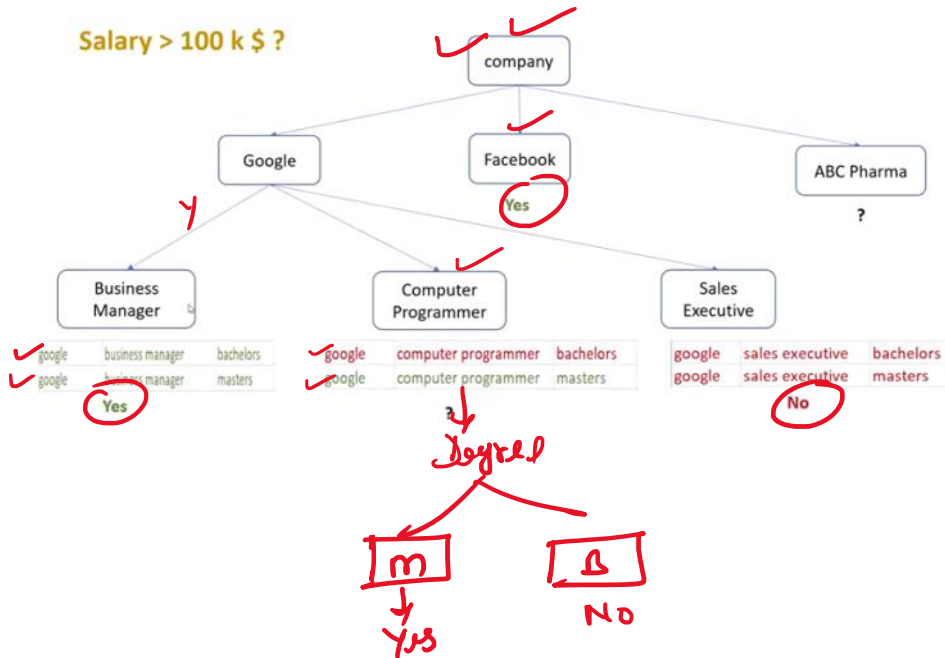
100 K USD

LR

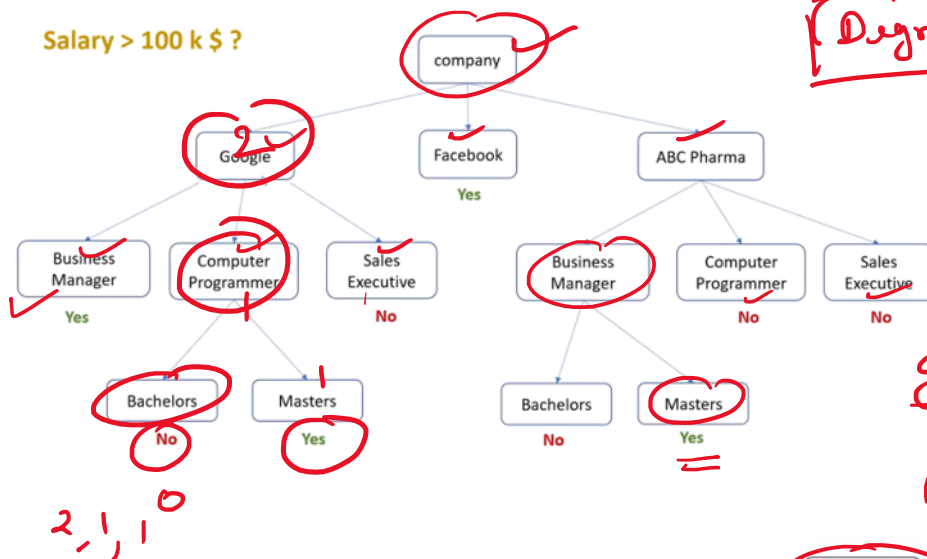
Salary > 100 k \$?



Salary > 100 k \$?



Salary > 100 k \$?

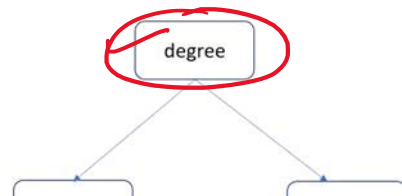


Degree



Google - 2
 FB → 1
 ABC → 3

2, 1, 1



Classification Types

Will customer buy life insurance?

1. Yes
2. No

Which party a person is going to vote for?

1. BJP
2. Congress
3. AAP

Binary Classification

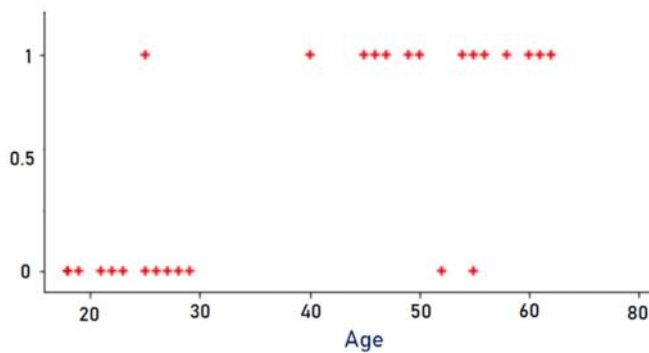
Multiclass Classification

age	have_insurance
22	0
25	0
47	1
52	0
46	1
56	1
55	0
60	1
62	1
61	1
18	0
28	0
27	0
29	0
49	1

xyz Insurance Company

(21)

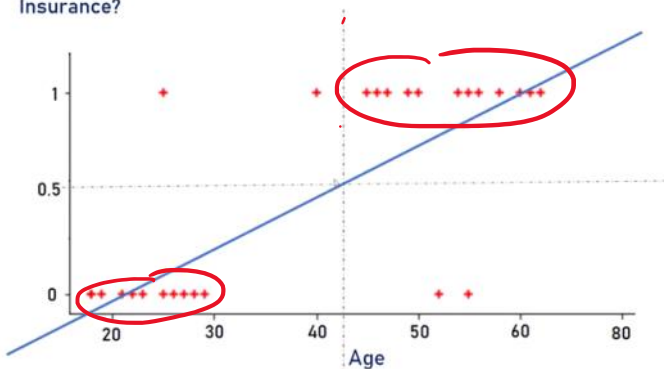
Have Insurance?



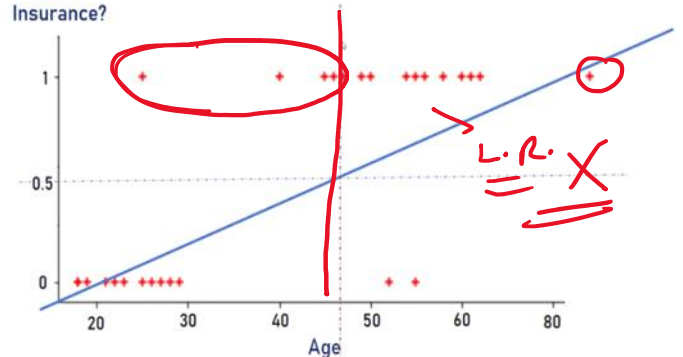
age	have_insurance
22	0
25	0
47	1
52	0
46	1
56	1
55	0
60	1
62	1
61	1
18	0
28	0
27	0
29	0
49	1

90

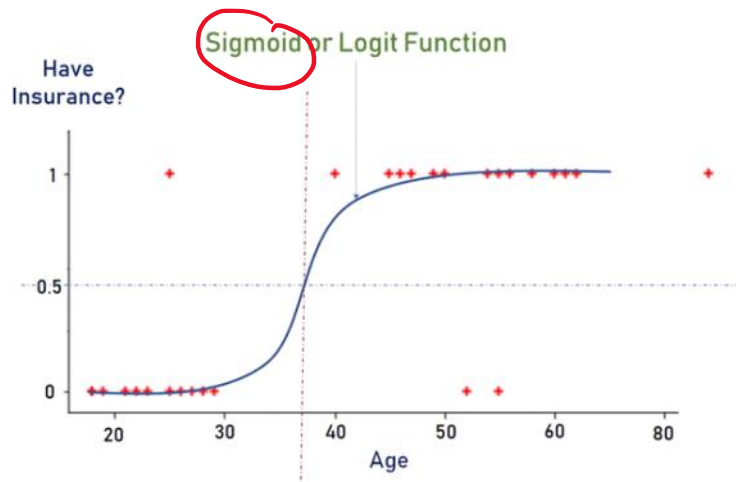
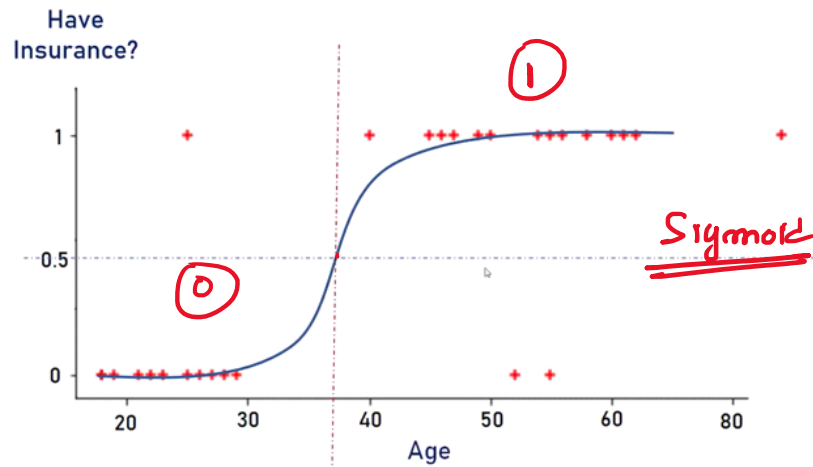
Have Insurance?



Have Insurance?

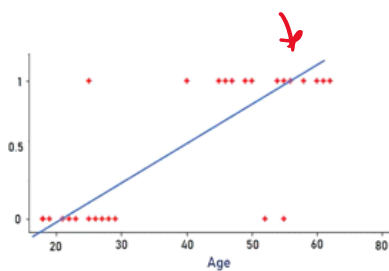


$$\underline{y = mx + c}$$



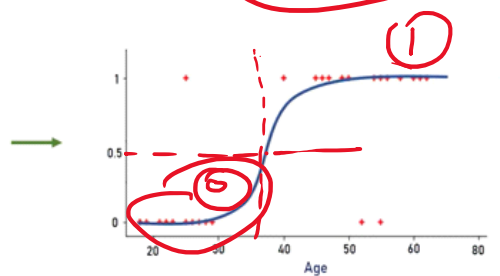
Linear Regression

$$y = m * x + b$$



Logistic Regression

$$y = \frac{1}{1 + e^{-(m*x+b)}}$$



$$\begin{aligned} < 0.5 = 0 \\ &0.5 = 0.5 \\ > 0.5 = 1 \end{aligned}$$