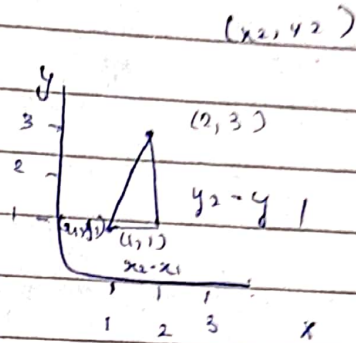
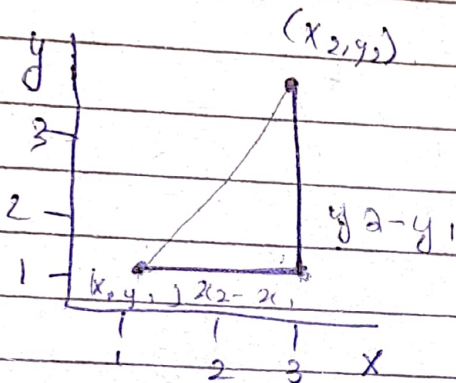


Day: _____

Date: _____

KNN



$$C^2 = a^2 + b^2$$

$$C = \sqrt{a^2 + b^2}$$

$$C = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$C^2 = a^2 + b^2$$

$$C = \sqrt{a^2 + b^2}$$

$$d(p_1, p_2) = |x_2 - x_1| + |y_2 - y_1|$$

$$d(p_1, p_2) = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\sum_{i=1}^n (|x_i - y_i|)^r)^{1/r}$$

Day: _____

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	Age	Weight	height	Salary
P_1	22	22 100	5.7 5.8	150
P_2	23	110	5.8	30
P_3	45	150	5.7	100

$d(P_1, P_2)$

$d(P_2, P_3)$

$d(P_1, P_3)$

$x_1 - x_2$

$x_2 - x_3$

$x_1 - x_3$

$$\sqrt{1 + (10)^2 + (0.1)^2 +$$

$$\frac{(120)^2}{100 + 0.01 + 14400}$$

$$14500.01$$

$$120.4$$

$$\sqrt{(100-22)^2 + (5.7-100)^2 + (5.7-22)^2} +$$

$$\sqrt{(22-23)^2 + (100-110)^2 + (5.7-5.8)^2} + (150-30)^2$$

$$\sqrt{(22-45)^2 + (100-150)^2 + (5.7-5.7)^2} + (30-100)^2$$

$$= 6984.01$$

$$= 83.57$$

$$\sqrt{(22-45)^2 + (100-150)^2 + (5.7-5.7)^2} + (150-100)^2$$

$$\sqrt{(-23)^2 + (-50)^2 + (0)^2}$$

Day: _____

Date: _____

TAMMUN
AFRO2

	age	Sal
P_1 23	50,000	1
P_2 15	49,000	→
P_3 22	46,000	2

Minmax

$$x' = \frac{x - \min}{\max - \min}$$

$$x' = \frac{23 - 15}{23 - 15} = 1$$

$$x' = \frac{15 - 15}{23 - 15} = 0$$

$$x' = \frac{22 - 15}{23 - 15} = 0.87$$

$$\frac{7}{8}$$

age Salary

$$\frac{23 - 15}{23 - 15} = 1$$

$$x' = \frac{49000 - 46000}{50000 - 46000}$$

$$= \frac{3}{4}$$

Day: _____

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not k (1,5)

f

$$f(x_q) \leftarrow \underset{v \in V}{\operatorname{argmax}} \sum_{i=1}^k \delta(v, f(x_i))$$

\downarrow labels \downarrow sample

$V \rightarrow \{\text{setosa}, \text{virginica}, \text{versicolour}\}$

$$\delta(a,b) = \begin{cases} 1 & \text{match} \\ 0 & \text{otherwise} \end{cases}$$

$$f(x_1) = \text{setosa}$$

$$f(x_2) = \text{setosa}$$

$$f(x_3) = \text{setosa}$$

$$f(x_4) = \text{virginica}$$

$$f(x_5) = \text{versicolour}$$

$$\delta(\overset{1}{\text{setosa}}, \overset{1}{\text{setosa}}) +$$

$$\delta(\overset{1}{\text{setosa}}, \overset{1}{\text{setosa}}) + \delta(\overset{1}{\text{setosa}}, \overset{1}{\text{setosa}}) +$$

$$\delta(\overset{0}{\text{setosa}}, \overset{0}{\text{virginica}}) + \delta(\overset{0}{\text{setosa}}, \overset{0}{\text{versicolour}})$$

Max Summation = 3

$$+ \delta(\overset{0}{\text{setosa}}, \overset{0}{\text{virginica}}) + ($$

+

ay: _____

Date: _____

Nommed. Data large

Hamming Distance

$$D_H = \sum_{i=1}^k |x_i - y_i|$$

karolin
kathrin
110001
mitch

3 → Distance

0 1 1

$$d(x_i, x_j)^2$$

$$s(v, f(x_i))$$

KNN neighbor

$$f(x) = \frac{\sum_{i=1}^k f(x_i)}{k}$$

sample

$$(2+2+7+2)$$

$$3(2) + 1(7)$$

$$3+1$$

weight se
divid

Day: _____

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$$w = \frac{1}{2(0)^3}$$

$$\frac{w_T N_T + w_S N_S + w_H N_H}{w_T + w_S + w_H}$$

F(5, 2)

S(6, 6)

T(4, 5)

H(2, 2)

L(3, 5) = 1

F, T = 1

(F, H) = 3

$$w_S = \frac{1}{(10)^2} = 1$$

$$w_T = 1$$

$$w_H = \frac{1}{(3)^2}$$

$$= 0.11$$

S

$$1 \times \frac{5}{2} + 1 \times 6 + 0.11(2)$$

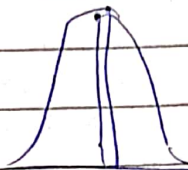
$$1 + 1 + 0.11$$

$$= 4.84$$

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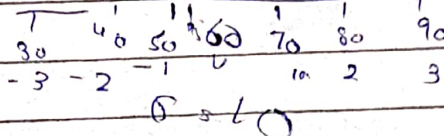
Date: _____

for 85
 $x = 0.5$



$$x' = \frac{x - u}{s}$$

$$x' = \frac{70 - 60}{10}$$



$$s = \frac{60 - 60}{0}$$

$$x' = 1$$

$$s = 10$$

$$s = 0$$

std =

$$\frac{50 - 60}{10}$$

$$s = \frac{10}{10}$$

mean & line
 avg deviation

for 80

$$x = 0$$

2 standard deviation

$$\frac{n + 2s}{n}$$

$$x' = \frac{x - \min}{\max - \min} \times (\text{new}_{\max} - \text{new}_{\min}) + \text{new}_{\min}$$

20
 23
 50

x'

$$20 \rightarrow x' = \frac{20 - 20}{50 - 20} (20 - 10) + 1$$

$$x' = 10$$

y: _____

Date: _____

x_1

$$50 \rightarrow x_1 = \frac{50-20(20-10)+10}{50-20}$$

$$= 20$$

$$x_2 = \frac{23-20(20-10)+10}{50-20}$$

$$= 17$$