Length	Diameter	Height	Whole weight	Shucked weight	Viscera weight	Shell weight	Rings
0.21	0.15	0.05	0.042	0.0175	0.0125	0.015	4
0.245	0.19	0.06	0.086	0.042	0.014	0.025	4
0.17	0.13	0.095	0.03	0.013	0.008	0.01	4
0.225	0.16	0.045	0.0465	0.025	0.015	0.015	4
0.13	0.1	0.03	0.013	0.0045	0.003	0.004	3
0.11	0.09	0.03	0.008	0.0025	0.002	0.003	3
0.245	0.195	0.06	0.095	0.0445	0.0245	0.026	4
0.28	0.21	0.085	0.1065	0.039	0.0295	0.03	4
0.2	0.145	0.06	0.037	0.0125	0.0095	0.011	4
0.21	0.15	0.05	0.0385	0.0155	0.0085	0.01	3

ข้อมูลตัวอย่าง

0.19	0.14	0.03	0.0315	0.0125	0.005	0.0105	?(3)

P(Ring=3|Length=0.19, Diameter=0.14, Height=0.03, Whole weight=0.0315, Shucked weight=0.0125, Viscera weight=0.005, Shell weight=0.0105) = ?

P(Ring=4|Length=0.19, Diameter=0.14, Height=0.03, Whole weight=0.0315, Shucked weight=0.0125, Viscera weight=0.005, Shell weight=0.0105) = ?

P(Ring=3) = 0.3

P(Ring=4) = 0.7

Length (0.19)

Ring = 4 : ค่าเฉลี่ย = $\frac{0.21+0.245+0.17+0.225+0.245+0.28+0.2}{7} = 0.225$

$\sigma^2 = \left(\frac{(0.21-0.225)^2+(0.245-0.225)^2+(0.17-0.225)^2+(0.225-0.225)^2+(0.245-0.225)^2+(0.28-0.225)^2+(0.2-0.225)^2}{7-1}\right) = 1.28x10^{-3}$

Ring = 3 : ค่าเฉลี่ย = $\frac{0.13+0.11+0.21}{3} = 0.15$

$\sigma^2 = \frac{(0.13-0.15)^2+(0.11-0.15)^2+(0.21-0.15)^2}{3-1} = 2.8x10^{-3}$

P(length=0.19|Ring=3) = $\frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.19-0.15)^2}{2(2.8x10^{-3})}}}{\sqrt{2\pi(2.8x10^{-3})}}$ = 5.67

P(length=0.19|Ring=4) = $\frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.19-0.225)^2}{2(1.28x10^{-3})}}}{\sqrt{2\pi(1.28x10^{-3})}} = 6.91$

Diameter (0.14)

Ring = 4 : ค่าเฉลี่ย = $\frac{0.15+0.19+0.13+0.16+0.195+0.21+0.145}{7} = 0.169$

$\sigma^2 = \left(\frac{(0.15-0.169)^2+(0.19-0.169)^2+(0.13-0.169)^2+(0.16-0.169)^2+(0.195-0.169)^2+(0.21-0.169)^2+(0.145-0.169)^2}{7-1}\right) = 8.9x10^{-4}$

Ring = 3 : ค่าเฉลี่ย $= \frac{0.1+0.09+0.15}{3} = 0.11$

$\sigma^2 = \frac{(0.1-0.11)^2+(0.09-0.11)^2+(0.15-0.11)^2}{3-1} = 1.05x10^{-3}$

P(Diameter=0.14|Ring=3) $= \frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.14-0.11)^2}{2(1.05x10^{-3})}}}{\sqrt{2\pi(1.05x10^{-3})}} = 8.02$

P(Diameter=0.14|Ring=4) $= \frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.14-0.169)^2}{2(8.9x10^{-4})}}}{\sqrt{2\pi(8.9x10^{-4})}} = 8.33$

Height (0.03)

Ring = 4 : ค่าเฉลี่ย $= \frac{0.05+0.06+0.095+0.045+0.06+0.085+0.06}{7} = 0.065$

$\sigma^2 = \left(\frac{(0.05-0.065)^2+(0.06-0.065)^2+(0.095-0.065)^2+(0.045-0.065)^2+(0.06-0.065)^2+(0.085-0.065)^2+(0.06-0.065)^2}{7-1}\right) = 3.33x10^{-4}$

Ring = 3 : ค่าเฉลี่ย $= \frac{0.03+0.03+0.05}{3} = 0.04$

$\sigma^2 = \frac{(0.03-0.04)^2+(0.03-0.04)^2+(0.05-0.04)^2}{3-1} = 1.5x10^{-4}$

P(Height=0.03|Ring=3) $= \frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.03-0.04)^2}{2(1.5x10^{-4})}}}{\sqrt{2\pi(1.5x10^{-4})}} = 23.34$

P(Height=0.03|Ring=4) $= \frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.03-0.065)^2}{2(3.33x10^{-4})}}}{\sqrt{2\pi(3.33x10^{-4})}} = 3.47$

Whole weight (0.0315)

Ring = 4 : ค่าเฉลี่ย $= \frac{0.042+0.086+0.03+0.0465+0.095+0.1065+0.037}{7} = 0.0632$

$\sigma^2 = \left(\frac{(0.042-0.0632)^2+(0.068-0.0632)^2+(0.03-0.0632)^2+(0.0465-0.0632)^2+(0.095-0.0632)^2+(0.1065-0.0632)^2+(0.037-0.0632)^2}{7-1}\right) = 9.04x10^{-4}$

Ring = 3 : ค่าเฉลี่ย $= \frac{0.013+0.08+0.0385}{3} = 0.044$

$\sigma^2 = \frac{(0.013-0.044)^2+(0.08-0.044)^2+(0.0385-0.044)^2}{3-1} = 1.14x10^{-3}$

P(Whole weight=0.0315|Ring=3) $= \frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.0315-0.044)^2}{2(1.14x10^{-3})}}}{\sqrt{2\pi(1.14x10^{-3})}} = 11.03$

P(Whole weight=0.0315|Ring=4) $= \frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.0315-0.0632)^2}{2(9.04x10^{-4})}}}{\sqrt{2\pi(9.04x10^{-4})}} = 7.61$

Shucked weight (0.0125)

Ring = 4 : ค่าเฉลี่ย = $\frac{0.0175+0.042+0.013+0.25+0.0445+0.039+0.125}{7} = 0.0276$

$\sigma^2 = \left(\frac{(0.0175-0.0276)^2+(0.042-0.0276)^2+(0.013-0.0276)^2+(0.025-0.0276)^2+(0.0445-0.0276)^2+(0.039-0.0276)^2+(0.125-0.0276)^2}{7-1}\right) = 1.73x10^{-3}$

Ring = 3 : ค่าเฉลี่ย = $\frac{0.0045+0.0025+0.0155}{3} = 0.0075$

$\sigma^2 = \frac{(0.0045-0.0075)^2+(0.0025-0.0075)^2+(0.0155-0.0075)^2}{3-1} = 4.9x10^{-5}$

P(Shucked weight=0.0125|Ring=3) = $\frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.0125-0.0075)^2}{2(4.9x10^{-5})}}}{\sqrt{2\pi(4.9x10^{-5})}} = 44.16$

P(Shucked weight=0.0125|Ring=4) = $\frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.0125-0.0267)^2}{2(1.73x10^{-3})}}}{\sqrt{2\pi(1.73x10^{-3})}} = 9.05$

Viscera weight (0.005)

Ring = 4 : ค่าเฉลี่ย = $\frac{0.0125+0.014+0.008+0.015+0.0245+0.0295+0.0095}{7} = 0.0161$

$\sigma^2 = \left(\frac{(0.0125-0.0161)^2+(0.014-0.0161)^2+(0.008-0.0161)^2+(0.015-0.0161)^2+(0.0245-0.0161)^2+(0.0295-0.0161)^2+(0.0095-0.0161)^2}{7-1}\right) = 6.3x10^{-5}$

Ring = 3 : ค่าเฉลี่ย = $\frac{0.003+0.002+0.0085}{3} = 0.0045$

$\sigma^2 = \frac{(0.003-0.0045)^2+(0.002-0.0045)^2+(0.0085-0.0045)^2}{3-1} = 1.23x10^{-5}$

P(Viscera weight=0.005|Ring=3) = $\frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.005-0.0045)^2}{2(1.23x10^{-5})}}}{\sqrt{2\pi(1.23x10^{-5})}} = 112.60$

P(Viscera weight=0.005|Ring=4) = $\frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.005-0.0161)^2}{2(6.3x10^{-5})}}}{\sqrt{2\pi(6.3x10^{-5})}} = 18.90$

Shell weight (0.0105)

Ring = 4 : ค่าเฉลี่ย = $\frac{0.015+0.025+0.01+0.015+0.026+0.03+0.011}{7} = 0.1689$

$\sigma^2 = \left(\frac{(0.015-0.1689)^2+(0.025-0.1689)^2+(0.01-0.1689)^2+(0.015-0.1689)^2+(0.026-0.1689)^2+(0.03-0.1689)^2+(0.011-0.1689)^2}{7-1}\right) = 2.63x10^{-2}$

Ring = 3 : ค่าเฉลี่ย = $\frac{0.004+0.003+0.01}{3} = 0.0057$

$\sigma^2 = \frac{(0.004-0.0057)^2+(0.003-0.0057)^2+(0.01-0.0057)^2}{3-1} = 1.43x10^{-5}$

P(Shell weight=0.0105|Ring=3) = $\frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.0105-0.0057)^2}{2(1.43x10^{-5})}}}{\sqrt{2\pi(1.43x10^{-5})}} = 47.14$

P(Shell weight=0.0105|Ring=4) = $\frac{e^{-\frac{(x-u)^2}{2\sigma^2}}}{\sqrt{2\pi\sigma^2}} = \frac{e^{-\frac{(0.0105-0.1689)^2}{2(2.63x10^{-2})}}}{\sqrt{2\pi(2.63x10^{-2})}} = 1.53$

P(Ring=3|Length=0.19, Diameter=0.14, Height=0.03, Whole weight=0.0315, Shucked weight=0.0125, Viscera weight=0.005, Shell weight=0.0105)

= P(Shell weight=0.0105|Ring=3) * P(Viscera weight=0.005|Ring=3) * P(Shucked weight=0.0125|Ring=3) * P(Whole weight=0.0315|Ring=3) * P(Height=0.03|Ring=3) * P(Diameter=0.14|Ring=3) * P(length=0.19|Ring=3) * P(Ring=3)

= $5.67 * 8.02 * 23.34 * 11.03 * 44.16 * 112.60 * 47.14 * 0.3 = 8.23 * 10^8$

P(Ring=4|Length=0.19, Diameter=0.14, Height=0.03, Whole weight=0.0315, Shucked weight=0.0125, Viscera weight=0.005, Shell weight=0.0105)

= P(Shell weight=0.0105|Ring=4) * P(Viscera weight=0.005|Ring=4) * P(Shucked weight=0.0125|Ring=4) * P(Whole weight=0.0315|Ring=4) * P(Height=0.03|Ring=4) * P(Diameter=0.14|Ring=4) * P(length=0.19|Ring=4) * P(Ring=4)

= $6.91 * 8.33 * 3.47 * 7.61 * 9.05 * 18.9 * 1.53 * 0.7 = 2.78 * 10^5$

$\therefore Output \longrightarrow Ring = 3$