Tutorial 5 – Algorithm Analysis   **2020**

Question 1

Analyze the running time of the following program fragments assuming a RAM model of computation. State any assumptions or definitions you make.

a)

$$i = 0$$
$$while(i <= 4)$$
$$\quad print(i)$$
$$\quad i = i + 1$$

b)

$$i = 0$$
$$while(i <= 20)$$
$$\quad print(i)$$
$$\quad i = i + 8$$

c)

$$i = 0$$
$$while(i < 4)$$
$$\quad j = 1$$
$$\quad\quad while(j <= 3)$$
$$\quad\quad\quad print(j)$$
$$\quad\quad\quad j = j + 1$$
$$\quad i = i + 1$$

d)

$$i = 0$$
$$j = 1$$
$$while(i < 4)$$
$$\quad print(i)$$
$$\quad\quad while(j <= 3)$$
$$\quad\quad\quad print(j)$$
$$\quad\quad\quad j = j + 1$$
$$\quad i = i + 1$$

e)

$$j = 1$$
$$while(j <= 10)$$
$$\quad j = j + 1$$
$$\quad a = 1$$

$$\quad while(a <= 3)$$
$$\quad\quad a = a + 1$$