Software Quality Engineering – Assignment No.3:

```
1.   public void run(int y, int z) {
2.     if (y < 6) {
3.       System.out.println("Some code");
4.     } else {
5.       System.out.println("Some more code");
6.     }
7.     while ((z == 1 && y != 4)) {
8.       System.out.println("Some while loop code");
9.       z++;
10.    }
11.  }
12.
13.  void main(String[] args) {
14.    int y = args[0];
15.    int z = args[1];
16.    run(y, z);
17.  }
```

$$\underline{set\ No.\,3:}$$
$$1-2-3-6-7-8_1-8_2-12-13$$
$$1-2-3-4-7-8_1-8_2-9-10-11-8_1-12-13$$
$$\underline{set\ No.\,6:}$$
$$1-2-3-6-7-8_1-8_2-9-10-11-8_1-12-13$$
$$1-2-3-4-7-8_1-8_2-12-13$$

Note on notation for that assignment: *In tables, if we write, for instance,* $[8_2]$, *it indicates line 8 of the code block, during the second iteration of the while loop.*

table for $: 1-2-3-6-7-8_1-8_2-12-13$

At The End of Row	Symbolic Store σ_s	PCT
15	$y \to y_0; z \to z_0$	True
2	[15]	$y_0 \geq 6$
5	[15]	[2]
7_1	[15]	$[2] \cap z_0 = 1 \cap y_0 = 4$
11	[15]	$[7_1]$

This path isn't feasible because there isn't a y_0 *that satisfies the condition:* $y_0 \geq 9 \cap y_0 = 4$. *This makes the minimal set 3* ***not*** *feasible.*

table for $: 1-2-3-4-7-8_1-8_2-9-10-11-8_1-12-13$

At The End of Row	Symbolic Store σ_s	PCT
15	$y \to y_0; z \to z_0$	True
2	[15]	$y_0 < 6$
3	[15]	[2]
7_1	[15]	$[2] \cap z_0 = 1 \cap y_0! = 4$
8_1	[15]	$[7_1]$
9_1	$y \to y_0; z \to z_0 + 1$	$[7_1]$
7_2	$[9_1]$	$[2] \cap z_0! = 1$
11	$[9_1]$	$[7_2]$

This path is feasable. There exsist such input that satisfy $y_0 < 6 \cap z_0 = 1 \cap y_0! = 4$. *For example* $: y_0 := 5$ *and* $z_0 := 1$. *After one iteration* $z_0! = 1$ *as needed.*

$$Table\ for: 1 - 2 - 3 - 4 - 7 - 8_1 - 8_2 - 9 - 10 - 11 - 8_1 - 12 - 13$$

At The End of Row	Symbolic Store σ_s	PCT
15	$y \to y_0; z \to z_0$	True
2	[15]	$y_0 \geq 6$
3	[15]	[2]
7_1	[15]	$[2] \cap z_0 = 1 \cap y_0! = 4$
8_1	[15]	$[7_1]$
9_1	$y \to y_0; z \to z_0 + 1$	$[7_1]$
7_2	$[9_1]$	$[2] \cap z_0! = 1$
11	$[9_1]$	$[7_2]$

This path is feasable. There exsist such input that satisfy $y_0 \geq 6 \cap z_0 = 1 \cap y_0! = 4.$
For example : $y_0 := 6\ and\ z_0 := 1$. *After one iteration* $z_0! = 1$ *as needed.*

$$Table\ for: 1 - 2 - 3 - 4 - 7 - 8_1 - 8_2 - 12 - 13$$

At The End of Row	Symbolic Store σ_s	PCT
15	$y \to y_0; z \to z_0$	True
2	[15]	$y_0 < 6$
5	[15]	[2]
7_1	[15]	$[2] \cap z_0 = 1 \cap y_0 = 4$
11	[15]	$[7_1]$

This path is feasable. There exsist such input that satisfy $y_0 < 6 \cap z_0 = 1 \cap y_0 = 4.$
For example : $y_0 := 4\ and\ z_0 := 1$
Both paths are feasable, therefore set 6 is feasable.