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. }
```

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

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

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

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

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

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

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]
6	[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	$[9_1]$	$[7_2]$

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

$set\ No.6$

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

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]
6	[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	$[9_1]$	$[7_2]$

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

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

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

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