

## TRN Generation

The tracking incident number is 10 characters in length. The first 9 characters is a range of TRN numbers provided by DPS. A check digit will have to be created to provide the 10<sup>th</sup> character. The complete TRN is constructed as follows:

NNNNNNNNNC

N = Numeric digits 0 thru 9 (the nine position numeric number is fixed with zeros being entered). These numeric digits are provided by DPS.

C = Alpha/numeric check digit MOD 11, 0-9 and X.

Each numeric position is assigned a weight. (See chart below) The weight is multiplied by the value of the position. The products are then added. The alpha check digit is then computed based on Modulus 11. The sum is divided by 11. The check digit number is equal to 11 minus the remainder. The letter "x" is used to represent the number ten.

Weight	10	9	8	7	6	5	4	3	2
	N	N	N	N	N	N	N	N	C

Example: 123456789?

$$1 \times 10 = 10$$

$$2 \times 9 = 18$$

$$3 \times 8 = 24$$

$$4 \times 7 = 28$$

$$5 \times 6 = 30$$

$$6 \times 5 = 30$$

$$7 \times 4 = 28$$

$$8 \times 3 = 24$$

$$9 \times 2 = \underline{18}$$

$$210$$

$$210/11 = 19 \text{ remainder } 1$$

$$\text{Check digit number } 11 - 1 = 10$$

Check digit is equal to ten.

Ten is represented by the letter "x".

The check digit can be checked by summing the products of the first nine numbers, then adding the check digit value to that sum. The resulting sum is then divided by 11. If there is no remainder, then the check digit is correct.

Example: 1234567899

$$\begin{array}{r}
 1 \times 10 = 10 \\
 2 \times 9 = 18 \\
 3 \times 8 = 24 \\
 4 \times 7 = 28 \\
 5 \times 6 = 30 \\
 6 \times 5 = 30 \\
 7 \times 4 = 28 \\
 8 \times 3 = 24 \\
 9 \times 2 = \underline{18} \\
 \hline
 210
 \end{array}$$

$$210 + 10 = 220$$

$$220/11 = 20 \text{ zero remainder.}$$

Check digit is correct.

The only anomaly to this algorithm occurs when a number divides evenly into the summed products when determining the check digit. In this case the check digit will be zero.

Example: 1100000100

$$\begin{array}{r}
 1 \times 10 = 10 \\
 1 \times 9 = 9 \\
 0 \times 8 = 0 \\
 0 \times 7 = 0 \\
 0 \times 6 = 0 \\
 0 \times 5 = 0 \\
 0 \times 4 = 0 \\
 1 \times 3 = 3 \\
 0 \times 2 = \underline{0} \\
 \hline
 22
 \end{array}$$

$$22/11 = 2 \text{ remainder zero}$$

Check digit is 0 (zero)

To request a range of TRNs for your agency please email: [livescan@dps.texasg.gov](mailto:livescan@dps.texasg.gov).