

Rna def

RNA is made up of strands of four different bases that encode genomic information in specific ways. The bases are elements of the set $B = \{\mathbf{A}, \mathbf{C}, \mathbf{U}, \mathbf{G}\}$.

Formally, to define the set of all RNA strands, we need more than roster method or set builder descriptions.

New! Recursive Definitions of Sets: The set S (pick a name) is defined by:

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|-----------------|------------------------------------------------------------------------------------------------------------------|
| Basis Step: | Specify finitely many elements of S |
| Recursive Step: | Give rule(s) for creating a new element of S from known values existing in S , and potentially other values. |

The set S then consists of all and only elements that are put in S by finitely many (a nonnegative integer number) of applications of the recursive step after the basis step.

Definition The set of nonnegative integers \mathbb{N} is defined (recursively) by:

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| Basis Step: | |
| Recursive Step: | |

Examples:

Definition The set of all integers \mathbb{Z} is defined (recursively) by:

| | |
|-----------------|--|
| Basis Step: | |
| Recursive Step: | |

Examples:

Definition The set of RNA strands S is defined (recursively) by:

| | |
|-----------------|--------------------------------------------------------------------------|
| Basis Step: | $\mathbf{A} \in S, \mathbf{C} \in S, \mathbf{U} \in S, \mathbf{G} \in S$ |
| Recursive Step: | If $s \in S$ and $b \in B$, then $sb \in S$ |

where sb is string concatenation.

Examples:

Definition The set of bitstrings (strings of 0s and 1s) is defined (recursively) by:

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| Basis Step: | |
| Recursive Step: | |

Notation: We call the set of bitstrings $\{0, 1\}^*$.

Examples: