Message Delimiters:

When we are constructing a message or parsing the message, certain special characters are used for the different purpose i.e. they are used as the segment terminator, the field separator, the component separator, subcomponent separator, repetition separator, and escape character.

In the HL7 Message the segment terminator will always a carriage return (in ASCII, a hex 0D) whereas the other delimiters are defined in the MSH segment as the field delimiter and the other delimiters occurring within the as the Encoding Characters.

HL7 standard allows the system who are communicating to set their own field delimiter and encoding characters, if the standard characters are not convenient to use. The delimiter values used in the MSH segment are the delimiter values used throughout the entire message. Following are delimiters with usage and suggested values:

Delimiter	Suggested Value	Usage
Segment Terminator	<cr>	This Delimiter marks the end of each segment. It acts as the segment terminator record. This value always remain the same as default <cr> it can be defined and updated by implementers.
Field Separator	|	This Separates two adjacent data fields within a segment.
Component Separator	^	This Separates adjacent components of data fields where allowed.
Subcomponent Separator	&	This Separates multiple fields considered as subcomponents of data fields where allowed.
Repetition Separator	~	This Separates multiple occurrences of a field as supported by the HL7.
Escape Character	\	Escape Character

We need to consider the delimiter based on the information submitted in the MSH Segment i.e. while transformation/parsing of the messages, we need to first consider the characters (field and encoding characters) from MSH Segment and them we can parse the rest of the message including the header segment for all the message type.

The sequence remains the same for the all the delimiter. The consideration of these delimiter remains same all the Message Type under the particular client. In order to identify the delimiters we can target the below mentioned character position and parse the message:

E.g. MSH | ^ ~ \ &

Delimiter	Character Position
Field Separator	MSH.1
Component Separator	MSH.2 @ Position 1
Repetition Separator	MSH.2 @ Position 2
Escape Character	MSH.2 @ Position 3
Subcomponent Separator	MSH.2 @ Position 4

Example

Considering an example where we receive the MSH 1 & 2 as following:

MSH#^~\&#LSQ#LSQ#TGIHL7#TEGInc#20220201014906##ADT^A04#10747535376#P#2.3#########

EVN#A04#20220201014906#####

PID#1##LSQ29992^^^^MR&AN##Jacobs^Richards^##19910823#M###381 Northern Ave.^Suite 992^New York^NY^10500^USA~109 Main St^^Clarence^NY^08861^USA##(555)555-5555^PRN^PH#####0066T000kQAG#000-11-1111####################

PV1#1##Home#####################################Assessment#####20220115000000#20220131000000#######

GT1#1##FirstName^LastName##381 Northern Ave.^Suite 992^Clarence^NY^08861^USA#(555)555-5555~(666)666-6666##19800823#F##02##

IN1#1#^^#^^^^#Blue Cross Blue Shield#PO Box 80^^Buffalo^NY^142400080^USA^^^##877-995-2696#4000555####20220101#20221231###FirstName^SecondName#02#19800823#^^^^^^^^#########################AMK603114444#######F###########

ZPS#1#Avidity#Nikey Martin#20220101#Phone#MH OP THERAPY TO ADDRESS ANXIETY AND DEPRESSION#

ZPS#2#HomeCare Agency#John Doe#Agency Care^Suite 010^New York^White Plains^NY^142400080#877-995-2696#

ZPS#3#20220116#