

Simulating mouse clicks by writing to memory

Conquest of the Longbow SCI Version 1.000.168

The game uses two pointers `stack_ptr0`, `stack_ptr1` found at offsets `0x1C8AC` and `0x1C8AE` (relative to a base pointer which needs to be determined separately) that are used as signals to the game engine that new input is available and should be processed.

	Address offset
stack_ptr0	0x1C8AC
stack_ptr1	0x1C8AE

These point to a 16-length input queue that contain information about keyboard and mouse events. Each event is described by 14 bytes long making the size of the input queue 16x14 bytes.

	Address offset	Pointer value (decimal)
event-data0	0x1D71A	14666
event-data1	0x1D728	14680
event-data2	0x1D736	14694
event-data3	0x1D744	14708
event-data4	0x1D752	14722
event-data5	0x1D760	14736
event-data6	0x1D76E	14750
event-data7	0x1D77C	14764
event-data8	0x1D78A	14778
event-data9	0x1D798	14792
event-data10	0x1D7A6	14806
event-data11	0x1D7B4	14820
event-data12	0x1D7C2	14834
event-data13	0x1D7D0	14848
event-data14	0x1D7DE	14862
event-data15	0x1D7EC	14876

`stack_ptr0` and `stack_ptr1` cycle the values shown starting from 14660

14666, 14680, 14694, 14708, 14722, 14736, 14750, 14764, 14778, 14792, 14806, 14820, 14834, 14848, 14862, 14876

Each event-data entry (*event_data0, event_data1, etc.*) is described as

bytes	datatype	
0-1	short	event-type (1=mousedown, 2=mouseup, 4=keyboard)
2-3	short	key-id if the event is a keystroke
4-5	short	mouse-button-id if the event is a mouse-press or mouse-release (0 = left-button, 3 = right-button)
6-9	int	the timestamp of the event (the value of a global clock is written in when event is registered)
10-11	short	mouse cursor y-position [0,319]
12-13	short	mouse cursor x-position [0,189]

To simulate a mouse press or keystroke we can write these values at the position where `queue_ptr1` is pointing. After writing the event data we finish the write-sequence by incrementing this pointer `queue_ptr1` (with the fixed values 14666,14680,14694,...,14876 and then back to 14666).

When the two pointers are different the game engine understands it as new mouse or keyboards events are available, if `queue_ptr0` is behind `queue_ptr1` it will process the event information pointed to by `queue_ptr0` (which points to the data just written to) and increment it until it equals `queue_ptr1`.