DPSK binary from ASK binary

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The following code, generates a binary DPSK sequence from a binary ASK sequence.

DPSK is a modulation technique in which each 1 bit triggers a phase shift of 180 degrees, but 0 bits have no effect.
A phase shift of 180 degrees is equivalent to multiplying by the previous bit by -1.

ASK binary sequence is represented by a sequence of 1's and 0's. Something like:
10011101001010
To generate the binary DPSK sequence for a bit slot, we look at the current ASK bit slot and the previous DPSK bit slot.
If the current ASK bit slot is 0, we use the same value assigned for the previous DPSK bit slot.
If the current ASK bit slot is 1, we use the same value assigned for the previous DPSK bit slot, multiplied by -1.

In[926]:=
```
ASKToDPSK[binary_] := Module[{dpskBits},
  dimbinary = Dimensions[binary][[1]];
  dpskBits = Table[1, {i, 1, dimbinary}];
  Do[dpskBits[[i]] = -(-1)^(binary[[i]] + 1) * dpskBits[[i - 1]], {i, 2, dimbinary}];
  dpskBits
 ];
```

In the following example, ASK = {1, 1, 0, 1, 0, 0} represents the binary ASK sequence.
The 1st element of the DPSK sequence is always assigned to 1 in our notation.
Since the 2nd element of ASK is 1, we multiply the 1st DPSK bit slot =1 by -1, therefore the 2nd element of DPSK becomes -1.
Since the 3rd element of ASK is 0, we use the same value assigned to the 2nd DPSK bit slot =-1, therefore the 3rd element of DPSK becomes -1.
Since the 4th element of ASK is 1, we multiply the 3rd DPSK bit slot =-1 by -1, therefore the 4th element of DPSK becomes 1.
Since the 5th element of ASK is 0, we use the same value assigned to the 4th DPSK bit slot =1, therefore the 5th element of DPSK becomes 1.
Since the 6th element of ASK is 0, we use the same value assigned to the 5th DPSK bit slot =1, therefore the 6th element of DPSK becomes 1.

In[927]:=
```
ASK = {1, 1, 0, 1, 0, 0};
ASKToDPSK[ASK]
```

Out[928]=
```
{1, -1, -1, 1, 1, 1}
```