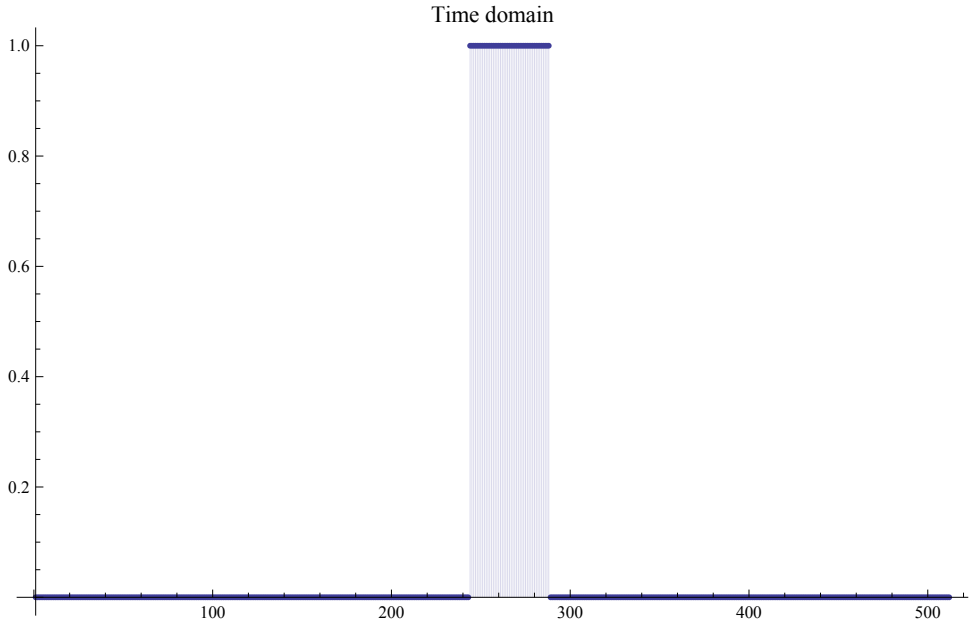
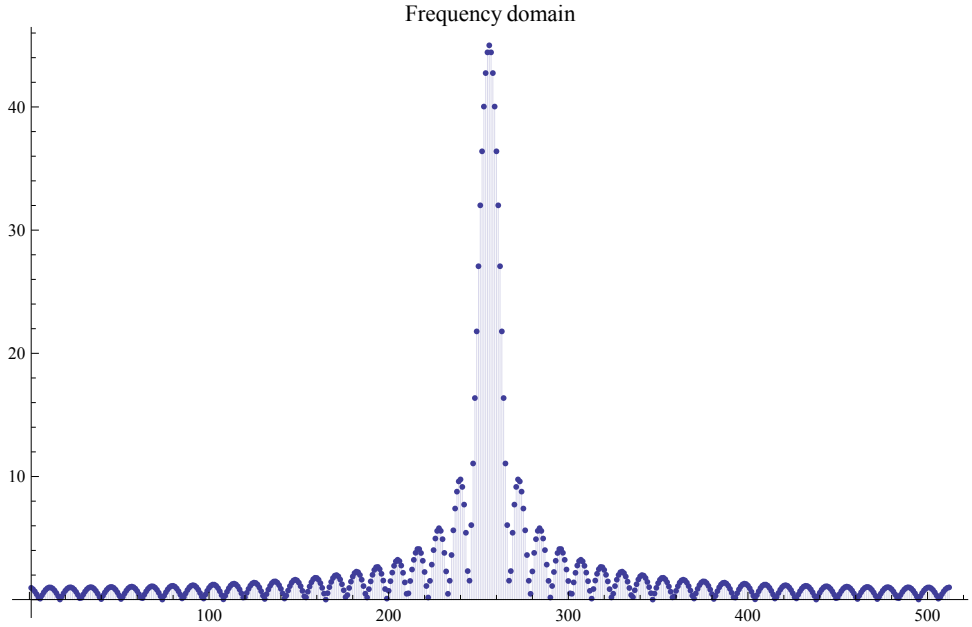
Example 3

In[393]:=
```
sizeIm = 500;
samplerate = 512;
Taps = 8;
Clear[discreteSignal, SampledData, DataforSpectra, DFTSpectra, result];
discreteSignal = Table[0, {samplerate}];
For[f = 1, f ≤ (samplerate + 1), f++,
  If[f ≥ 244 && f ≤ 288,
    discreteSignal[[f]] = 1;
    ,
   ];
 ];
SampledData = discreteSignal;
DFTSpectra = Fourier[SampledData, FourierParameters → {1, -1}];
Clear[result];
result = List[];
For[f = 0, f < Taps, f++,
  result = Append[result, SampledData];
 ];
path = "D:\\Skola\\Projekty\\Artemis\\";

Export[path <> "example3.dat",
  Flatten[result], "Table", "FieldSeparators" → " "];

ListPlot[SampledData, Filling → Axis, PlotRange → All,
 ImageSize → sizeIm, PlotLabel → "Time domain"]
ListPlot[RotateLeft[ Abs[DFTSpectra] , 257], Filling → Axis,
 PlotRange → All, ImageSize → sizeIm, PlotLabel → "Frequency domain"]
```

Out[406]=



Out[407]=



In[414]:=

```
indatawithDFT =
  Import["example3_w_DFT.dat", Path → "D:\\skola\\Projekty\\artemis\\"];
indatawithDFTcomplex = Table[indatawithDFT[[i, 1]] + I * indatawithDFT[[i, 2]],
   {i, 1, Length[indatawithDFT]}];
ListPlot[ RotateLeft[ Abs[indatawithDFTcomplex] , 0],
 Filling → Axis, PlotRange → All, ImageSize → 500,
 PlotLabel → "Frequency domain after FIR Filter"]
```

Out[416]=