```
// Blinky.v  PDR 7.7.19 / 14.11.19
module top (
  input OSCIN, // 100MHz
  output LED);

reg [24:0] cnt;

assign LED = cnt[24];

always @(posedge OSCIN) begin
  cnt <= cnt + 1;
end

endmodule
```

```
# Blinky.pcf  PDR 14.11.19
set_io OSCIN  21
set_io LED 37
```

```
$ yosys -q -p 'synth_ice40 -blif blinky.blif' Blinky.v
$ arachne-pnr -d 8k -P tq144:4k -p Blinky.pcf \
    -o blinky.asc blinky.blif
...
$ icetime -d hx8k -P tq144:4k -p Blinky.pcf blinky.asc
...
$ icepack blinky.asc blinky.bin
$ cat 64xFF.bin blinky.bin 8xFF.bin > blinky.dfu \
    && dfu-suffix -a blinky.dfu
...
$ dfu-util -D blinky.dfu
...
$
```

```
$ dd if=/dev/zero ibs=64 count=1 | tr "\000" "\377" > 64xFF.bin
$ dd if=64xFF.bin ibs=8 count=1 > 8xFF.bin
```

```
$ yosys -q -p 'synth_ice40 \
  -blif blinky.blif' Blinky.v
$ arachne-pnr -d 8k -P tq144:4k \
  -p Blinky.pcf -o blinky.asc blinky.blif
seed: 1
device: 8k
read_chipdb +/share/arachne-pnr/chipdb-
8k.bin...
  supported packages: bg121, bg121:4k,
cb132, cb132:4k, cm121, cm121:4k, cm225,
cm225:4k, cm81, cm81:4k, ct256, tq144:4k
read_blif blinky.blif...
prune...
read_pcf Blinky.pcf...
instantiate_io...
pack...

After packing:
IOs          2 / 107
GBs          0 / 8
  GB_IOs     0 / 8
LCs          27 / 7680
  DFF        3
  CARRY      2
  CARRY, DFF 22
  DFF PASS   0
  CARRY PASS 1
BRAMs        0 / 32
WARMBOOTs    0 / 1
PLLs         0 / 2

place_constraints...
promote_globals...
  promoted OSCIN$2, 25 / 25
  promoted 1 nets
    1 clk
  1 globals
    1 clk
realize_constants...
place...
  initial wire length = 161
  at iteration #50: temp = 9.61943, wire
length = 62
  at iteration #100: temp = 5.19795, wire
length = 58
  at iteration #150: temp = 0.455789, wire
length = 17
  final wire length = 16

After placement:
PIOs       2 / 107
PLBs       6 / 960
BRAMs      0 / 32

  place time 0.01s
route...
  pass 1, 0 shared.

After routing:
span_4     3 / 29696
span_12    2 / 5632

  route time 0.02s
write_txt blinky.asc...

$ icetime -d hx8k -P tq144:4k \
   -p Blinky.pcf  blinky.asc
// Reading input .pcf file..
// Reading input .asc file..
// Reading 8k chipdb file..
// Creating timing netlist..
// Timing estimate: 5.52 ns (181.11 MHz)

$ icepack blinky.asc blinky.bin
$ cat 64xFF.bin blinky.bin 8xFF.bin \
  > blinky.dfu && dfu-suffix -a blinky.dfu
dfu-suffix (dfu-util) 0.9

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Suffix successfully added to file
$ dfu-util -D blinky.dfu
dfu-util 0.9

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Stefan Schmidt...

Opening DFU capable USB device...
ID 04d8:fffe
Run-time device DFU version 0100
Claiming USB DFU Runtime Interface...
Determining device status: state = dfuIDLE,
status = 0
dfu-util: WARNING: Runtime device already
in DFU state ?!?
Claiming USB DFU Interface...
Setting Alternate Setting #0 ...
Determining device status: state = dfuIDLE,
status = 0
dfuIDLE, continuing
DFU mode device DFU version 0100
Device returned transfer size 64
Copying data from PC to DFU device
Download     [=========================]
100%       135172 bytes
Download done.
state(2) = dfuIDLE, status(0) = No error
condition is present
Done!
```