```
Release 14.7 - xst P.20131013 (nt64)
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--> Parameter TMPDIR set to xst/projnav.tmp


Total REAL time to Xst completion: 0.00 secs
Total CPU time to Xst completion: 0.14 secs

--> Parameter xsthdpdir set to xst


Total REAL time to Xst completion: 0.00 secs
Total CPU time to Xst completion: 0.14 secs

--> Reading design: BrentKung16bit.prj

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=========================================================================
===
*                      Synthesis Options
Summary                          *
=========================================================================
===
---- Source Parameters
Input File Name                    : "BrentKung16bit.prj"
Ignore Synthesis Constraint File   : NO

---- Target Parameters
Output File Name                   : "BrentKung16bit"
```

```
Output Format                      : NGC
Target Device                      : xc7a100t-3-csg324

---- Source Options
Top Module Name                    : BrentKung16bit
Automatic FSM Extraction           : YES
FSM Encoding Algorithm             : Auto
Safe Implementation                : No
FSM Style                          : LUT
RAM Extraction                     : Yes
RAM Style                          : Auto
ROM Extraction                     : Yes
Shift Register Extraction          : YES
ROM Style                          : Auto
Resource Sharing                   : YES
Asynchronous To Synchronous        : NO
Shift Register Minimum Size        : 2
Use DSP Block                      : Auto
Automatic Register Balancing       : No

---- Target Options
LUT Combining                      : Auto
Reduce Control Sets                : Auto
Add IO Buffers                     : YES
Global Maximum Fanout              : 100000
Add Generic Clock Buffer(BUFG)     : 32
Register Duplication               : YES
Optimize Instantiated Primitives   : NO
Use Clock Enable                   : Auto
Use Synchronous Set                : Auto
Use Synchronous Reset              : Auto
Pack IO Registers into IOBs        : Auto
Equivalent register Removal        : YES

---- General Options
Optimization Goal                  : Speed
Optimization Effort                : 1
Power Reduction                    : NO
Keep Hierarchy                     : No
Netlist Hierarchy                  : As_Optimized
RTL Output                         : Yes
Global Optimization                : AllClockNets
Read Cores                         : YES
Write Timing Constraints           : NO
Cross Clock Analysis               : NO
Hierarchy Separator                : /
Bus Delimiter                      : <>
Case Specifier                     : Maintain
Slice Utilization Ratio            : 100
BRAM Utilization Ratio             : 100
```

```
DSP48 Utilization Ratio            : 100
Auto BRAM Packing                  : NO
Slice Utilization Ratio Delta      : 5

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=========================================================================
===
*                            HDL
Parsing                                  *
=========================================================================
===
Analyzing Verilog file "F:\Software files\Quartus files\self
projects\Brent Kung\PROP.v" into library work
Parsing module <PROP>.
Analyzing Verilog file "F:\Software files\Quartus files\self
projects\Brent Kung\GEN.v" into library work
Parsing module <GEN>.
Analyzing Verilog file "F:\Software files\Quartus files\self
projects\Brent Kung\BlackCell.v" into library work
Parsing module <BlackCell>.
Analyzing Verilog file "F:\Software files\Quartus files\self
projects\Brent Kung\BrentKung16bit.v" into library work
Parsing module <BrentKung16bit>.

=========================================================================
===
*                              HDL
Elaboration                                *
=========================================================================
===

Elaborating module <BrentKung16bit>.

Elaborating module <GEN>.

Elaborating module <PROP>.

Elaborating module <BlackCell>.

=========================================================================
===
*                            HDL
Synthesis                                 *
=========================================================================
===

Synthesizing Unit <BrentKung16bit>.
```

```
    Related source file is "F:\Software files\Quartus files\self
projects\Brent Kung\BrentKung16bit.v".
    Summary:
Unit <BrentKung16bit> synthesized.

Synthesizing Unit <GEN>.
    Related source file is "F:\Software files\Quartus files\self
projects\Brent Kung\GEN.v".
    Summary:
        no macro.
Unit <GEN> synthesized.

Synthesizing Unit <PROP>.
    Related source file is "F:\Software files\Quartus files\self
projects\Brent Kung\PROP.v".
    Summary:
Unit <PROP> synthesized.

Synthesizing Unit <BlackCell>.
    Related source file is "F:\Software files\Quartus files\self
projects\Brent Kung\BlackCell.v".
    Summary:
        no macro.
Unit <BlackCell> synthesized.

=========================================================================
===
HDL Synthesis Report

Macro Statistics
# Xors                                                  : 17
 1-bit xor2                                            : 16
 16-bit xor2                                           : 1

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===

=========================================================================
===
*                      Advanced HDL
Synthesis                           *
=========================================================================
===


=========================================================================
===
Advanced HDL Synthesis Report

Macro Statistics
```

```
# Xors                                                  : 17
 1-bit xor2                                            : 16
 16-bit xor2                                           : 1

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=========================================================================
===
*                           Low Level
Synthesis                                *
=========================================================================
===

Optimizing unit <BrentKung16bit> ...

Mapping all equations...
Building and optimizing final netlist ...
Found area constraint ratio of 100 (+ 5) on block BrentKung16bit,
actual ratio is 0.

Final Macro Processing ...

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===
Final Register Report

Found no macro
=========================================================================
===

=========================================================================
===
*                             Partition
Report                                 *
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Partition Implementation Status
-------------------------------

  No Partitions were found in this design.

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=========================================================================
===
*                              Design
Summary                                *
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```

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Top Level Output File Name         : BrentKung16bit.ngc

Primitive and Black Box Usage:
------------------------------
# BELS                             : 24
#      LUT3                        : 8
#      LUT5                        : 16
# IO Buffers                       : 50
#      IBUF                        : 33
#      OBUF                        : 17

Device utilization summary:
---------------------------

Selected Device : 7a100tcsg324-3


Slice Logic Utilization:
 Number of Slice LUTs:                  24  out of  63400     0%
    Number used as Logic:               24  out of  63400     0%

Slice Logic Distribution:
 Number of LUT Flip Flop pairs used:    24
   Number with an unused Flip Flop:     24  out of     24   100%
   Number with an unused LUT:            0  out of     24     0%
   Number of fully used LUT-FF pairs:    0  out of     24     0%
   Number of unique control sets:        0

IO Utilization:
 Number of IOs:                         50
 Number of bonded IOBs:                 50  out of    210    23%

Specific Feature Utilization:

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Partition Resource Summary:
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  No Partitions were found in this design.

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=========================================================================
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Timing Report

NOTE: THESE TIMING NUMBERS ARE ONLY A SYNTHESIS ESTIMATE.
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```
      FOR ACCURATE TIMING INFORMATION PLEASE REFER TO THE TRACE REPORT
      GENERATED AFTER PLACE-and-ROUTE.

Clock Information:
------------------
No clock signals found in this design

Asynchronous Control Signals Information:
----------------------------------------
No asynchronous control signals found in this design

Timing Summary:
---------------
Speed Grade: -3

   Minimum period: No path found
   Minimum input arrival time before clock: No path found
   Maximum output required time after clock: No path found
   Maximum combinational path delay: 4.215ns

Timing Details:
---------------
All values displayed in nanoseconds (ns)

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===
Timing constraint: Default path analysis
  Total number of paths / destination ports: 321 / 17
-------------------------------------------------------------------------
---
Delay:               4.215ns (Levels of Logic = 10)
  Source:            a<1> (PAD)
  Destination:       Sum<15> (PAD)

  Data Path: a<1> to Sum<15>
                                Gate     Net
    Cell:in->out      fanout   Delay   Delay  Logical Name (Net Name)
    ----------------------------------------  ------------
     IBUF:I->O             2   0.001   0.688  a_1_IBUF (a_1_IBUF)
     LUT5:I0->O            3   0.097   0.305  C<2>1 (C<2>)
     LUT5:I4->O            3   0.097   0.389  C<4> (C<4>)
     LUT5:I3->O            3   0.097   0.305  C<6>1 (C<6>)
     LUT5:I4->O            3   0.097   0.389  C<8> (C<8>)
     LUT5:I3->O            3   0.097   0.305  C<10>1 (C<10>)
     LUT5:I4->O            3   0.097   0.389  C<12> (C<12>)
     LUT5:I3->O            3   0.097   0.389  Cout11 (Cout1)
     LUT5:I3->O            1   0.097   0.279  Cout2 (Cout_OBUF)
     OBUF:I->O                 0.000          Cout_OBUF (Cout)
    ----------------------------------------
    Total                      4.215ns (0.777ns logic, 3.439ns route)
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                                          (18.4% logic, 81.6% route)

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Cross Clock Domains Report:
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Total REAL time to Xst completion: 15.00 secs
Total CPU time to Xst completion: 14.88 secs

-->

Total memory usage is 4617480 kilobytes

Number of errors   :    0 (   0 filtered)
Number of warnings :    0 (   0 filtered)
Number of infos    :    0 (   0 filtered)
```