**Э.001.05. Восьмиразрядный сумматор. Текст программы. Приложение.**

Листинг 1. Файл "sum.v"

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| --- |
| `timescale 1ns / 1ps  module sum(  input wire clk,  input [7:0] a,  input [7:0] b,  output reg [8:0] c  );    always@(posedge clk)  c <= a + b;    endmodule |

Листинг 2. Файл "create.tcl"

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| --- |
| cd [file dirname [info script]]  create\_project sum\_project sum\_project -part xc7a100tcsg324-1  import\_files -norecurse sum\_project/sum.v  update\_compile\_order -fileset sources\_1  file mkdir sum\_project/sum\_project.srcs/constrs\_1  add\_files -fileset constrs\_1 -norecurse ccs.xdc  import\_files -fileset constrs\_1 ccs.xdc  launch\_runs impl\_1 -to\_step write\_bitstream -jobs 16 |

Листинг 3. Файл "ccs.xdc"

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| --- |
| set\_property -dict { PACKAGE\_PIN E3 IOSTANDARD LVCMOS33 } [get\_ports { clk }];  create\_clock -add -name sys\_clk\_pin -period 10.00 -waveform {0 5} [get\_ports {clk}];  set\_property -dict { PACKAGE\_PIN J15 IOSTANDARD LVCMOS33 } [get\_ports { a[0] }];  set\_property -dict { PACKAGE\_PIN L16 IOSTANDARD LVCMOS33 } [get\_ports { a[1] }];  set\_property -dict { PACKAGE\_PIN M13 IOSTANDARD LVCMOS33 } [get\_ports { a[2] }];  set\_property -dict { PACKAGE\_PIN R15 IOSTANDARD LVCMOS33 } [get\_ports { a[3] }];  set\_property -dict { PACKAGE\_PIN R17 IOSTANDARD LVCMOS33 } [get\_ports { a[4] }];  set\_property -dict { PACKAGE\_PIN T18 IOSTANDARD LVCMOS33 } [get\_ports { a[5] }];  set\_property -dict { PACKAGE\_PIN U18 IOSTANDARD LVCMOS33 } [get\_ports { a[6] }];  set\_property -dict { PACKAGE\_PIN R13 IOSTANDARD LVCMOS33 } [get\_ports { a[7] }];  set\_property -dict { PACKAGE\_PIN T8 IOSTANDARD LVCMOS18 } [get\_ports { b[0] }];  set\_property -dict { PACKAGE\_PIN U8 IOSTANDARD LVCMOS18 } [get\_ports { b[1] }];  set\_property -dict { PACKAGE\_PIN R16 IOSTANDARD LVCMOS33 } [get\_ports { b[2] }];  set\_property -dict { PACKAGE\_PIN T13 IOSTANDARD LVCMOS33 } [get\_ports { b[3] }];  set\_property -dict { PACKAGE\_PIN H6 IOSTANDARD LVCMOS33 } [get\_ports { b[4] }];  set\_property -dict { PACKAGE\_PIN U12 IOSTANDARD LVCMOS33 } [get\_ports { b[5] }];  set\_property -dict { PACKAGE\_PIN U11 IOSTANDARD LVCMOS33 } [get\_ports { b[6] }];  set\_property -dict { PACKAGE\_PIN V10 IOSTANDARD LVCMOS33 } [get\_ports { b[7] }];  set\_property -dict { PACKAGE\_PIN H17 IOSTANDARD LVCMOS33 } [get\_ports { c[0] }]; #IO\_L18P\_T2\_A24\_15 Sch=led[0]  set\_property -dict { PACKAGE\_PIN K15 IOSTANDARD LVCMOS33 } [get\_ports { c[1] }]; #IO\_L24P\_T3\_RS1\_15 Sch=led[1]  set\_property -dict { PACKAGE\_PIN J13 IOSTANDARD LVCMOS33 } [get\_ports { c[2] }]; #IO\_L17N\_T2\_A25\_15 Sch=led[2]  set\_property -dict { PACKAGE\_PIN N14 IOSTANDARD LVCMOS33 } [get\_ports { c[3] }]; #IO\_L8P\_T1\_D11\_14 Sch=led[3]  set\_property -dict { PACKAGE\_PIN R18 IOSTANDARD LVCMOS33 } [get\_ports { c[4] }]; #IO\_L7P\_T1\_D09\_14 Sch=led[4]  set\_property -dict { PACKAGE\_PIN V17 IOSTANDARD LVCMOS33 } [get\_ports { c[5] }]; #IO\_L18N\_T2\_A11\_D27\_14 Sch=led[5]  set\_property -dict { PACKAGE\_PIN U17 IOSTANDARD LVCMOS33 } [get\_ports { c[6] }]; #IO\_L17P\_T2\_A14\_D30\_14 Sch=led[6]  set\_property -dict { PACKAGE\_PIN U16 IOSTANDARD LVCMOS33 } [get\_ports { c[7] }]; #IO\_L18P\_T2\_A12\_D28\_14 Sch=led[7]  set\_property -dict { PACKAGE\_PIN V16 IOSTANDARD LVCMOS33 } [get\_ports { c[8] }]; #IO\_L16N\_T2\_A15\_D31\_14 Sch=led[8] |