Green University of Bangladesh

Department of Computer Science and Engineering(CSE)
Faculty of Sciences and Engineering
Semester: (Summer, Year:2021), B.Sc. in CSE (Day

Final Exam

Course Title: Computer Architecture
Course Code: CSE-211 Section:193DB

Student Details

	Name	ID
1.	Jakirul Islam	193002101

Course Teacher's Name : Syed Ahsanul Kabir

Status	
Marks:	Signature:.....
Comments:.....	Date:.....

193002101

Ans to the Q.NO: 8

$x_k * (y_k + z_k)$ for, $k = 1, 2, 3, 4, 5$

The suboperations that performs in each segment of pipeline.

Segment 1 : $R_1 \leftarrow Y_k$, $R_2 \leftarrow Z_k$ input Y_k and Z_k

Segment 2 : $R_3 \leftarrow R_1 + R_2$; $R_4 \leftarrow X_k$ Add and input X_k

Segment 3 : $R_5 \leftarrow R_4 * R_3$

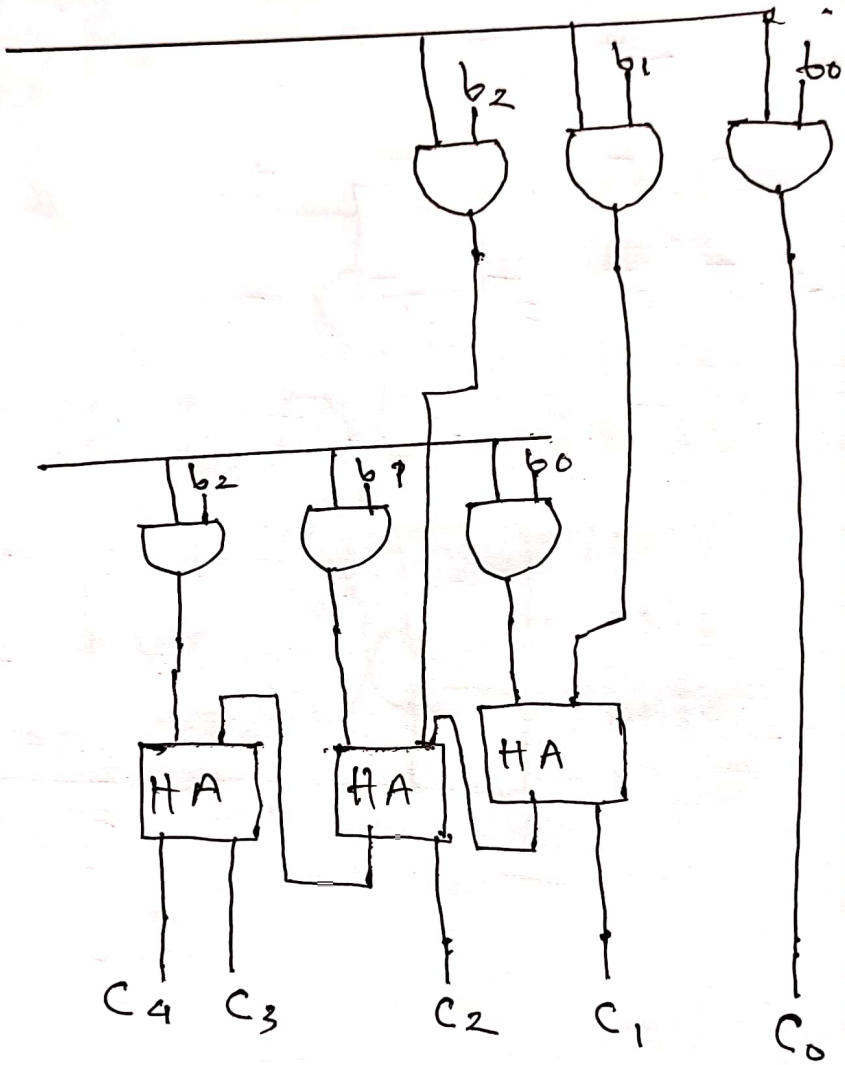
Contents of registers:

clock pulse number	Segment 1		Segment 2		Segment 3
	R_1	R_2	R_3	R_4	R_5
1	Y_1	Z_1	-	-	-
2	Y_2	Z_2	$Y_1 + Z_1$	X_1	-
3	Y_3	Z_3	$Y_2 + Z_2$	X_2	$(Y + Z_1) * X_1$
4	Y_4	Z_4	$Y_3 + Z_3$	X_3	$(Y_2 + Z_2) * X_2$
5	Y_5	Z_5	$Y_4 + Z_4$	X_4	$(Y_3 + Z_3) * X_3$
6	-	-	$Y_5 + Z_5$	X_5	$(Y_4 + Z_4) * X_4$
7	-	-	-	-	$(Y_5 + Z_5) * X_5$

Space-time map:

	1	2	3	4	5	6	7	clock cycles
Segment 1	T_1	T_2	T_3	T_4	T_5			
Segment 2	-	T_1	T_2	T_3	T_4	T_5		
Segment 3	-	-	T_1	T_2	T_3	T_4	T_5	

Ans to the Q.NO: 9



$b_2\ b_1\ b_0$

$a_1\ a_0\ x$

$a_1b_2\ a_1b_1\ a_0b_0$

$a_2b_2\ a_1b_1\ a_1b_0$

$C\quad C_1\ C_0$

$b_2\quad b_1\quad b_0$

$a_1\quad a_2\quad x$

$a_0b_2\quad a_0b_1\quad a_0b_0$

$a_2b_2\quad a_1b_1\quad a_1b_0$

$C_3\quad C_2\quad C_1\quad C_0$

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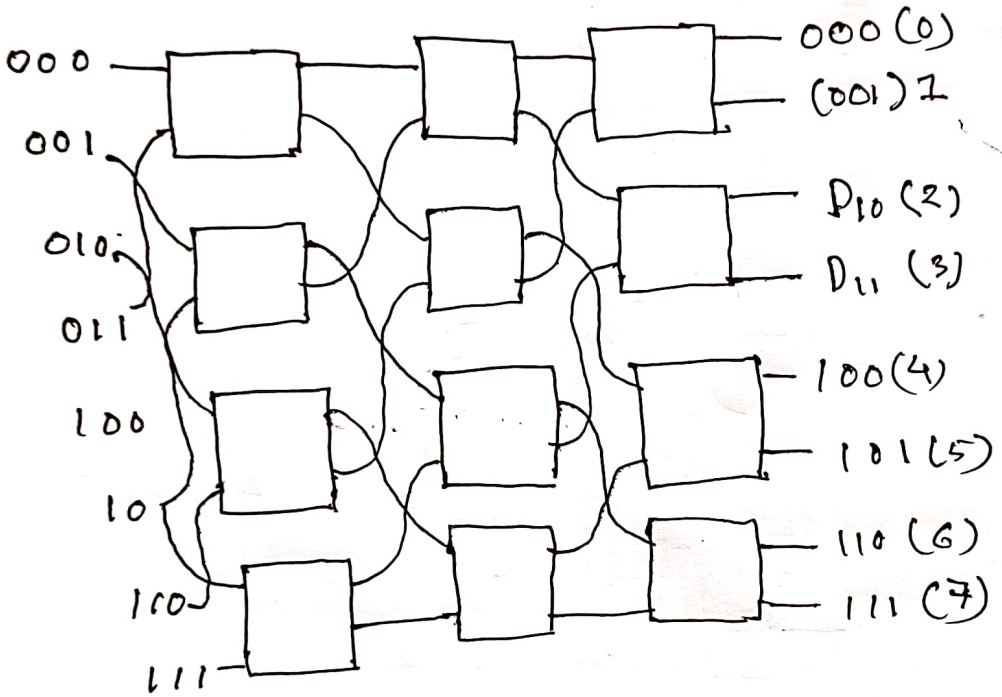
Ans to the Q.no: 10

Construct a diagram for an 8x8 omega switching stage



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Ans to the Q.no: 11

given that,

Segment = 3

$k = 3$

$t_p = 35\,ns$

$n = 100$

$\therefore$ speed up ratio $= \dfrac{nkt_p}{(n+k-1)t_p}$

$= \dfrac{100 \times 3 \times 35}{(100+3-1) \times 35}$

$= 2.94$

$\therefore$ Ans is 2.94