Albert Bernal

3.13.-

a) Ciclos = 2GHz * 2s = 4*10^9
   Tc = 2s/4*10^9 = 5*10^-10

b) Penalización = 10 ciclos
   t= 3s

c)

Ciclo	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CPU								Dato								
L1	miss						car	car								
L2			Latencia				T0	T1								

d) Cpen = 5+0.7+0.2+0.3+0.4 = 6.6 ciclos
   t = 2.66 s

e)

Ciclo	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CPU							Dato									
L1	miss						car									
L2			Latencia				T0									

f) Cpen = 5+1 = 6
   t = 2.6s

g) speedup1 = 3/2.66 = 1.1278
   speedup2 = 3/2.6 = 1.1538

3.14.-

tipo	@	bloq	TAG	conj	a/f	repl	bytesE	bytesL
L	B12B	2C4	B1	0	F	2B0	0	64
L	B145	2C5	B1	1	F	2B1	0	64
L	B1AF	2C6	B1	2	F	2B2	64	64
L	B1C4	2C7	B1	3	F	2B3	64	0
E	4387	10E	43	2	A		0	64

L	1108	44	11	0	F	10C	64	64
E	1199	46	11	2	F	4E	0	64
L	11AA	46	11	2	A		0	0

tipo	@	bloq	TAG	conj	c-a/f	bytes E	bytesL	actual	b-a/f	pref
L	B12B	2C4	B1	0	F	0	64		F	2C5
L	B145	2C5	B1	1	F	0	64	2C5	A	2C6
L	B1AF	2C6	B1	2	F	64	64	2C6	A	2C7
L	B1C4	2C7	B1	3	F	64	0	2C7	A	2C8
E	4387	10E	43	2	A	0	64	2C8		
L	1108	44	11	0	F	64	64	2C8	F	045
E	1199	46	11	2	F	0	64	045	F	047
L	11AA	46	11	2	A	0	0	047		

Apéndice: Cronogramas Tema 3

Problema 16

Cronograma 1: Buffer de 1 entrada.

Iteración	<--------------Iteración 0 ------------->									<--------------------Iteración 1 -------------------->																																		
Ciclo	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
movl %eax, a(,%esi,4)	A										-	-	A										-	-	A													-	-	A				
movl %eax, b(,%esi,4)		-	-	-	-	-	B							-	-	-	-	-	B							-	-	-	-	-	B								-	-	-	-	-	B
incl %esi								i												i												i												i
cmpl $N, %esi						c															c												c											
jl A									j													j												j									
Ocupación bus			a[0]						b[0]						a[1]						b[1]					a[2]					b[2]					a[3]								b[3
# Buffer	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1
Buffer[0]			a[0]						b[0]						a[1]						b[1]					a[2]					b[2]					a[3]								b[3]

CPI = ...2.4 c/i..................................... Ancho de banda = ..0.6 B/i..............................

Cronograma 2: Buffer de 2 entradas

Iteración																																												
Ciclo	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
movl %eax, a(,%esi,4)	A					-	A									-	A									-	A									-	A							
movl %eax, b(,%esi,4)		B							-	-	-	-	B						-	-	-	-	B					-	-	-	-	B						-	-	-	-	B		
incl %esi			i										i											i									i										i
cmpl $N, %esi				c										c											c									c										c
jl A					j										j										j										j									
Ocupación bus	0			a[0]					b[0]					a[1]					b[1]					a[2]				b[2]					a[3]				b[3]						a[4]
# Buffer	0	1	2	2	2	2	1	2	2	2	2	1	2	2	2	2	1	2	2	2	2	1	2	2	2	2	1	2	2	2	2	1	2	2	2	2	1	2	2	2	2	1	2	2
Buffer[0]				a[0]					b[0]					a[1]					b[1]					a[2]				b[2]					a[3]				b[3]						a[4]
Buffer[1]					b[0]					a[1]					b[1]					a[2]					b[2]					a[3]					b[3]					a[4]			b[4]

CPI = .2 c/i....................................... Ancho de banda = ...0.8 B/i..............................

Cronograma 3: Buffer de 3 entradas

	Ciclo	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Iteración																																													
movl %eax, a(,%esi,4)		A				A						-	A							-	A													-	A								-	A	
movl %eax, b(,%esi,4)			B					B						-	-	-	-	B				-	-	-	-	B										-	-	-	-	B				-	-
incl %esi				i					i										i											i										i				
cmpl $N, %esi					c					c										c											c										c			
jl A						j					j										j											j											j		
Ocupación bus		0				a[0]						b[0]					a[1]				b[1]					a[2]					b[2]					a[3]					b[3]					a[4]
# Buffer		0	1	2	2	2	3	1	2	2	2	3	1	2	2	2	3	1	2	2	2	3	1	2	2	2	3	1	2	2	2	3	1	2	2	2	3	1	2	2	2	3	1	2	2
Buffer[0]		0				a[0]					b[0]					a[1]					b[1]					a[2]					b[2]					a[3]					b[3]					a[4]
Buffer[1]				b[0]					a[1]					b[1]					a[2]					c[2]					a[3]					b[3]					a[4]					b[5]
Buffer[2]					a[1]					b[1]					a[2]					b[2]					a[3]					b[3]					a[4]					b[5]				a[5]

CPI = ..2 c/i.......................................   Ancho de banda = ...0.8 B/i...........................

Cronograma 4: Merge buffer de 3 entradas

	Ciclo	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Iteración																																													
movl %eax, a(,%esi,4)		A				A						-	A								A					A					A					A					A			
movl %eax, b(,%esi,4)			B					B						-	-	-	-	B					B				B					B				B					B		
incl %esi				i					i									i					i				i					i				i					i		
cmpl $N, %esi					c					c										c					c					c					c					c			c
jl A						j					j										j					j					j					j					j		
Ocupación bus		0				a[0]					b[0]					a[1]					b[1]				a[2:3]					b[2:3]					a[4:5]					b[4:5]					a[6:7]
# Buffer		0	1	2	2	2	2	3	3	3	3	2	3	3	3	3	2	3	3	3	2	2	2	2	2	2	3	3	3	2	2	2	2	2	3	3	3	3	2	2	2	2	3	2	2
Buffer[0]		0				a[0]					b[0]					a[1]					b[1]				a[2:3]					b[2:3]					a[4:5]					b[4:5]					a[6:7]
Buffer[1]											no estoy seguro de qué hay en estos buffer																																	
Buffer[2]																																													

CPI = ...1 c/i...   Ancho de banda = ...1.6 B/i............................