Lab 2: Scheduling

List Scheduling (1/3)

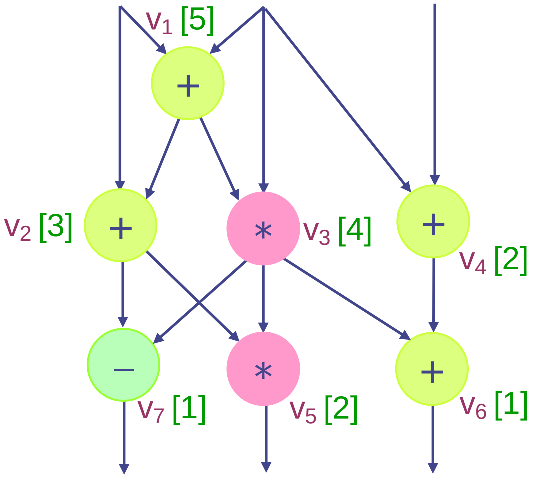
List Scheduling

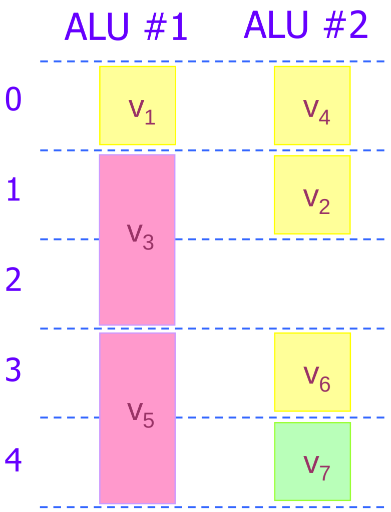
- A resource-constrained scheduling method
- Start at time zero and increase time until all operations have been scheduled
- The ready list contains all operations that can start their execution at the current time step or later
- If more operations are ready than there are resources available, use some priority function to choose, e.g. the longest-path to the output node ⇒ *critical-path list scheduling*

List Scheduling (2/3)

```
INSERT_READY_OPS (V, $PList_{t_1}$, $PList_{t_2}$, ..., $PList_{t_m}$);
Cstep = 0;
while ($PList_{t_1} \neq \phi$) or ... or ($PList_{t_m} \neq \phi$)) do
    Cstep = Cstep + 1;      /* $PList_{t_k}$: priority list for operation type $t_k$ */
    for $k$ = 1 to $m$ do      /* $N_{t_k}$: number of function units performing operation of type $t_k$ */
        for funit = 1 to $N_k$ do
            if $PList_{t_k} \neq \phi$ then
                SCHEDULE_OP($S_{current}$, FIRST($PList_{t_k}$), Cstep);
                $PList_{t_k}$ = DELETE($PList_{t_k}$, FIRST($PList_{t_k}$));
            endif
        endfor
    endfor
    INSERT_READY_OPS (V, $PList_{t_1}$, $PList_{t_2}$, ..., $PList_{t_m}$);
endwhile
```

List Scheduling (3/3)





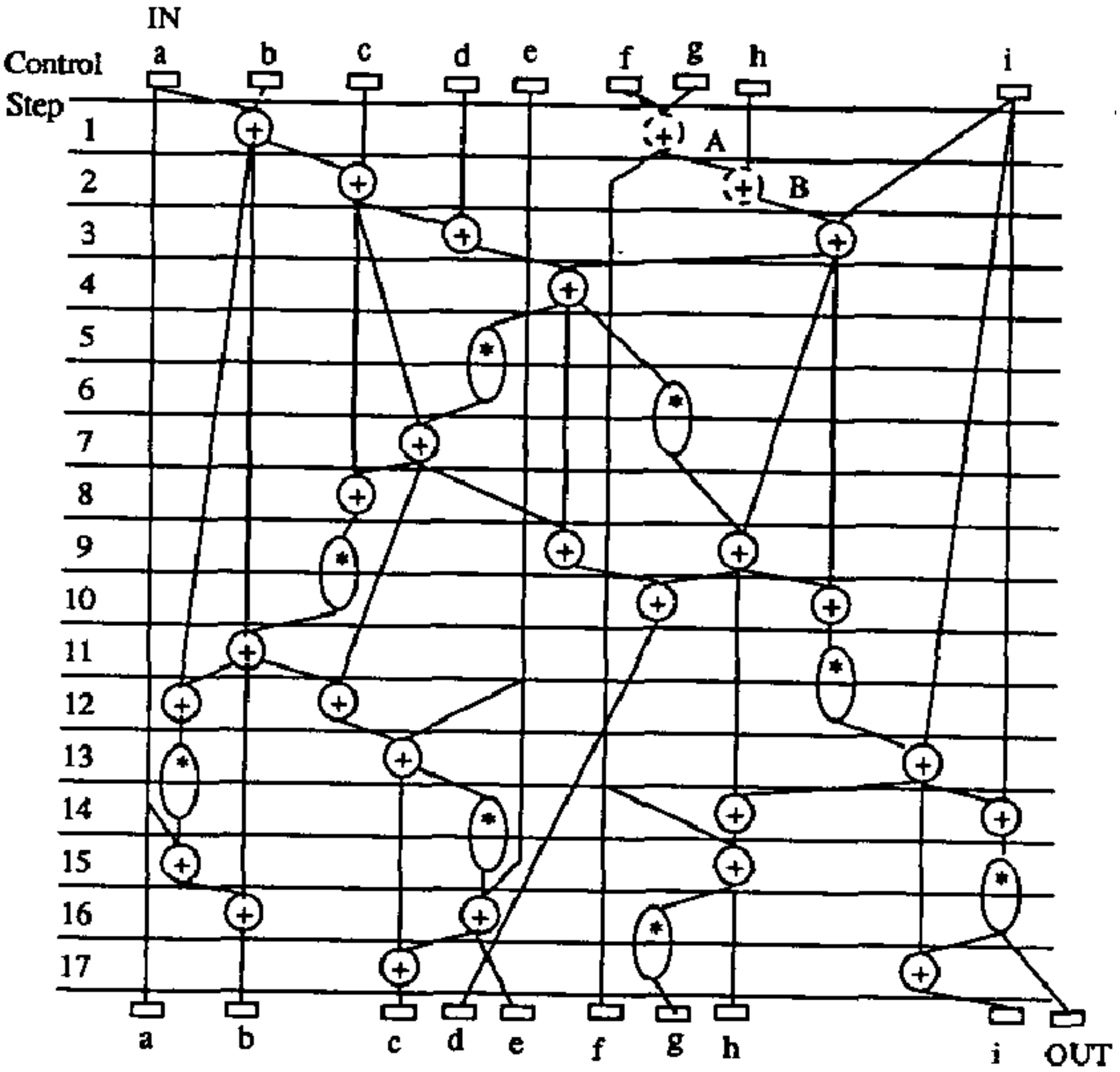
	ALU #1	ALU #2
0	v_1	v_4
1	v_3	v_2
2		
3	v_5	v_6
4		v_7

t	Ready List
0	{ v_1 [5], v_4 [2] }
1	{ v_3 [4], v_2 [3] }
2	ϕ
3	{ v_5 [2], v_6 [1], v_7 [1] }
4	{ v_7 [1] }

Lab 2: Scheduling

- 下載並安裝Dev-C++
- 參閱List Scheduling程式範例
- 撰寫List Scheduling的C/C++程式
- 以List Scheduling程式進行DFG1以及DFG2的排程
- 以List Scheduling程式進行RGB to YUV的排程
- 撰寫並繳交實驗報告

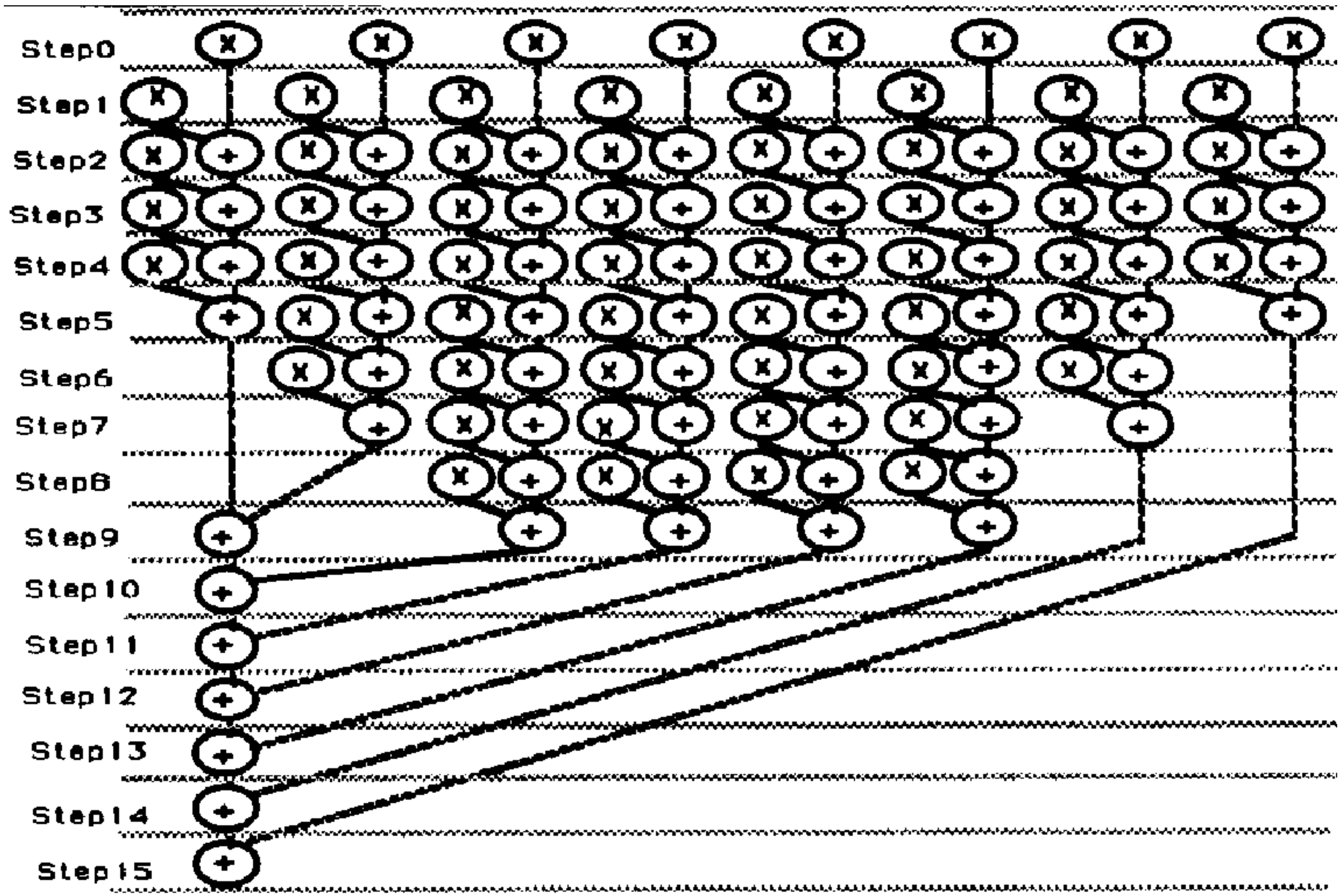
DFG1



Resource constraints:

*	+
1	1
1	2
2	1
2	2

DFG2



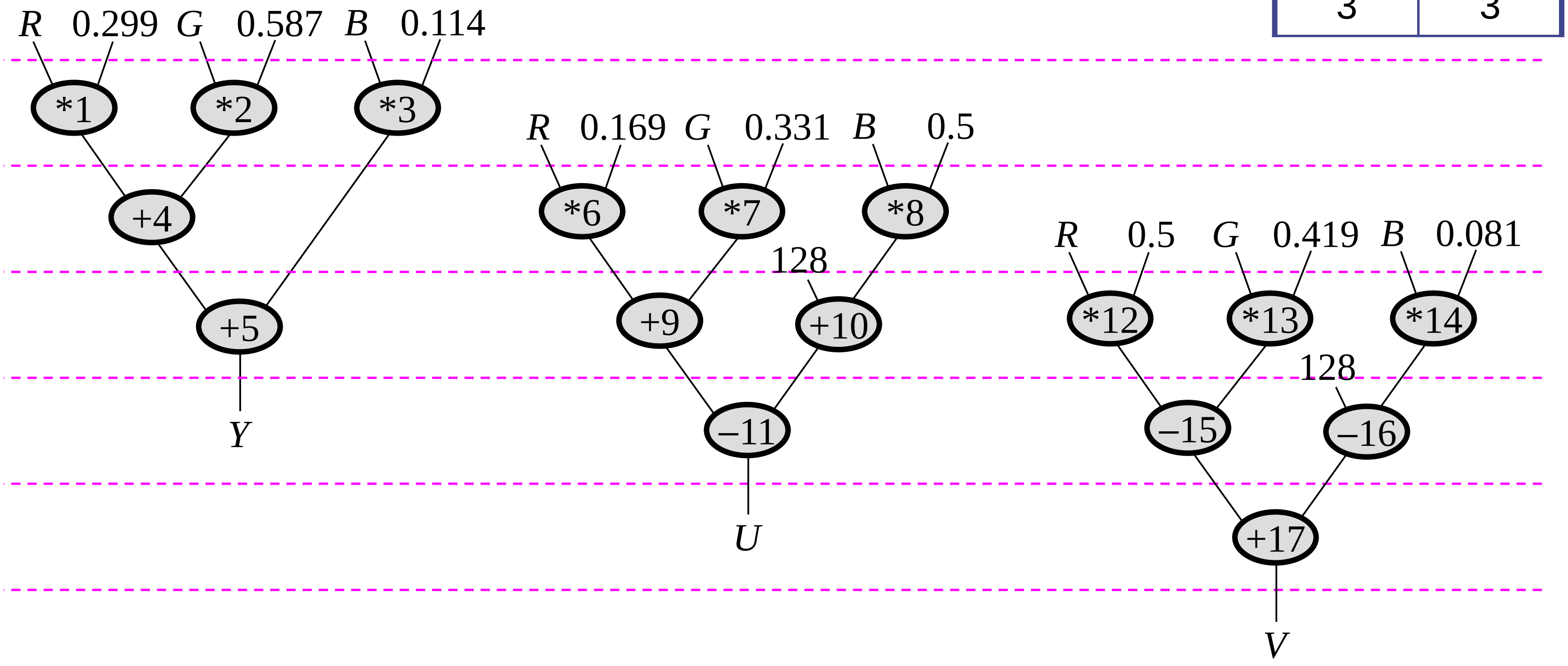
Resource constraints:

*	+
1	1
1	2
2	1
2	2
3	1
3	2
1	3
2	3
3	3

RGB to YUV

Resource constraints:

*	+
1	1
1	2
1	3
2	1
2	2
2	3
3	1
3	2
3	3



實驗報告+程式碼

- 實驗報告 及程式碼以壓縮檔繳交，每位同學均須繳交
- 實驗報告壓縮檔請以實驗編號及自己的學號姓名命名，例如：Lab2_M999999999陳小華.rar，於規定時間內上傳至“中山大學網路大學-作業評量區”繳交
- 實驗報告內容包含
  - 實驗主題、實驗日期、學號姓名
  - 實驗內容、過程及結果
    - 實驗內容、程式簡要說明…
    - 實驗畫面、DFG 、 Scheduling 結果…
    - 實驗結果及分析
  - 實驗心得