

Experiment 9: Write a program to read the marks of 10 students in 5 subjects calculate the average and assign grades. Now draw its graph matrix and find its V(G).

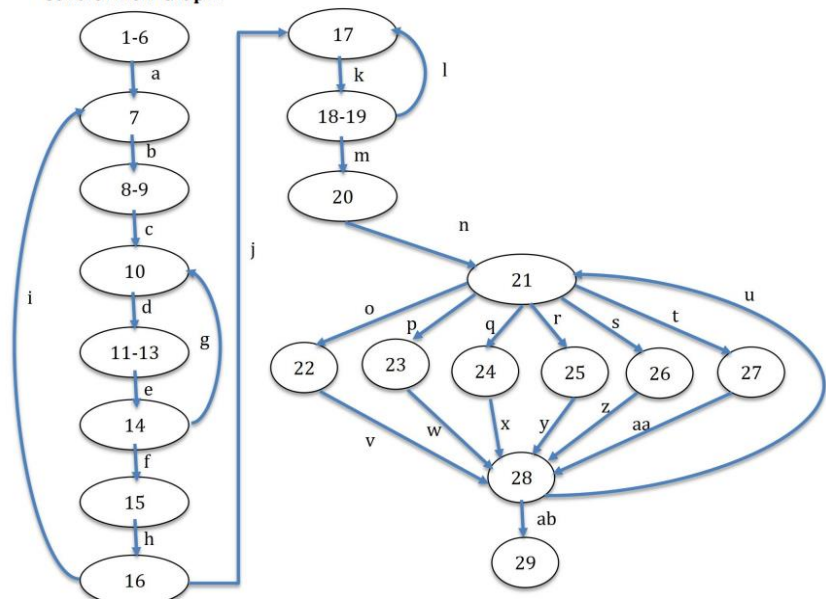
Solution:

```

1. #include<stdio.h>
2. int main()
3. {
4. float marks[10][6], student_total;
5. char stu_grade;
6. int i, j;
7. for(i = 0; i < 10; i++){
8. printf("\nStudent-%d:\n", i);
9. student_total = 0;
10. for(j = 0; j < 5; j++){
11. printf("Subject-%d: ", j);
12. scanf("%f", &marks[i][j]);
13. student_total += marks[i][j];
14. }
15. marks[i][5] = student_total/5.0;
16. }
17. for(i = 0; i < 10; i++){
18. printf("\n\nStudent-%d Average: %f", i, marks[i][5]);
19. }
20. printf("\n\n");
21. for(i = 0; i < 10; i++){
22. if(marks[i][5] <= 4){ stu_grade = 'F';}
23. else if(marks[i][5] <= 5){ stu_grade = 'E';}
24. else if(marks[i][5] <= 6){ stu_grade = 'D';}
25. else if(marks[i][5] <= 7){ stu_grade = 'C';}
26. else if(marks[i][5] <= 8){ stu_grade = 'B';}
27. else{ stu_grade = 'A';}
28. printf("Student-%d Grade: %c\n", i, stu_grade);}
29. return 0;
30. }

```

Control Flow Graph:



Matrix:

	1-6	7	8-9	10	11-13	14	15	16	17	18-19	20	21	22	23	24	25	26	27	28	29
1-6		a																		
7			b																	
8-9				c																
10					d															
11-13						e														
14				g			f													
15								h												
16		i							j											
17										k										
18-19									l		m									
20											n									
21													o	p	q	r	s	t		
22																			v	
23																			w	
24																			x	
25																			y	
26																			z	
27																			aa	
28												u								ab
29																				

Connection Matrix:

	1-6	7	8-9	10	11-13	14	15	16	17	18-19	20	21	22	23	24	25	26	27	28	29
1-6		1																		
7			1																	
8-9				1																
10					1															
11-13						1														
14				1			1													
15								1												
16		1							1											
17										1										
18-19									1		1									
20											1									
21												1	1	1	1	1	1			
22																			1	
23																			1	
24																			1	
25																			1	
26																			1	
27																			1	
28											1									1
29																				

Cyclomatic Complexity = $0+0+0+0+0+1+0+1+0+1+0+5+0+0+0+0+0+0+1 = 9$

Output:

```

Student-0:
Subject-0: 1
Subject-1: 1
Subject-2: 1
Subject-3: 1
Subject-4: 1

Student-1:
Subject-0: 2
Subject-1: 2
Subject-2: 2
Subject-3: 2
Subject-4: 2

Student-2:
Subject-0: 3
Subject-1: 3
Subject-2: 3
Subject-3: 3
Subject-4: 3

Student-3:
Subject-0: 4
Subject-1: 4
Subject-2: 4
Subject-3: 4
Subject-4: 4

Student-4:
Subject-0: 5
Subject-1: 5
Subject-2: 5
Subject-3: 5
Subject-4: 5

Student-5:
Subject-0: 6
Subject-1: 6
Subject-2: 6
Subject-3: 6
Subject-4: 6

Student-6:
Subject-0: 7
Subject-1: 7
Subject-2: 7
Subject-3: 7
Subject-4: 7

Student-7:
Subject-0: 8
Subject-1: 8
Subject-2: 8
Subject-3: 8
Subject-4: 8

Student-8:
Subject-0: 9
Subject-1: 9
Subject-2: 9
Subject-3: 9
Subject-4: 9

Student-9:
Subject-0: 10
Subject-1: 10
Subject-2: 10
Subject-3: 10
Subject-4: 10

Student-0 Average: 1.000000
Student-1 Average: 2.000000
Student-2 Average: 3.000000
Student-3 Average: 4.000000
Student-4 Average: 5.000000
Student-5 Average: 6.000000
Student-6 Average: 7.000000
Student-7 Average: 8.000000
Student-8 Average: 9.000000
Student-9 Average: 10.000000

Student-0 Grade: F
Student-1 Grade: F
Student-2 Grade: F
Student-3 Grade: F
Student-4 Grade: E
Student-5 Grade: D
Student-6 Grade: C
Student-7 Grade: B
Student-8 Grade: A
Student-9 Grade: A

```