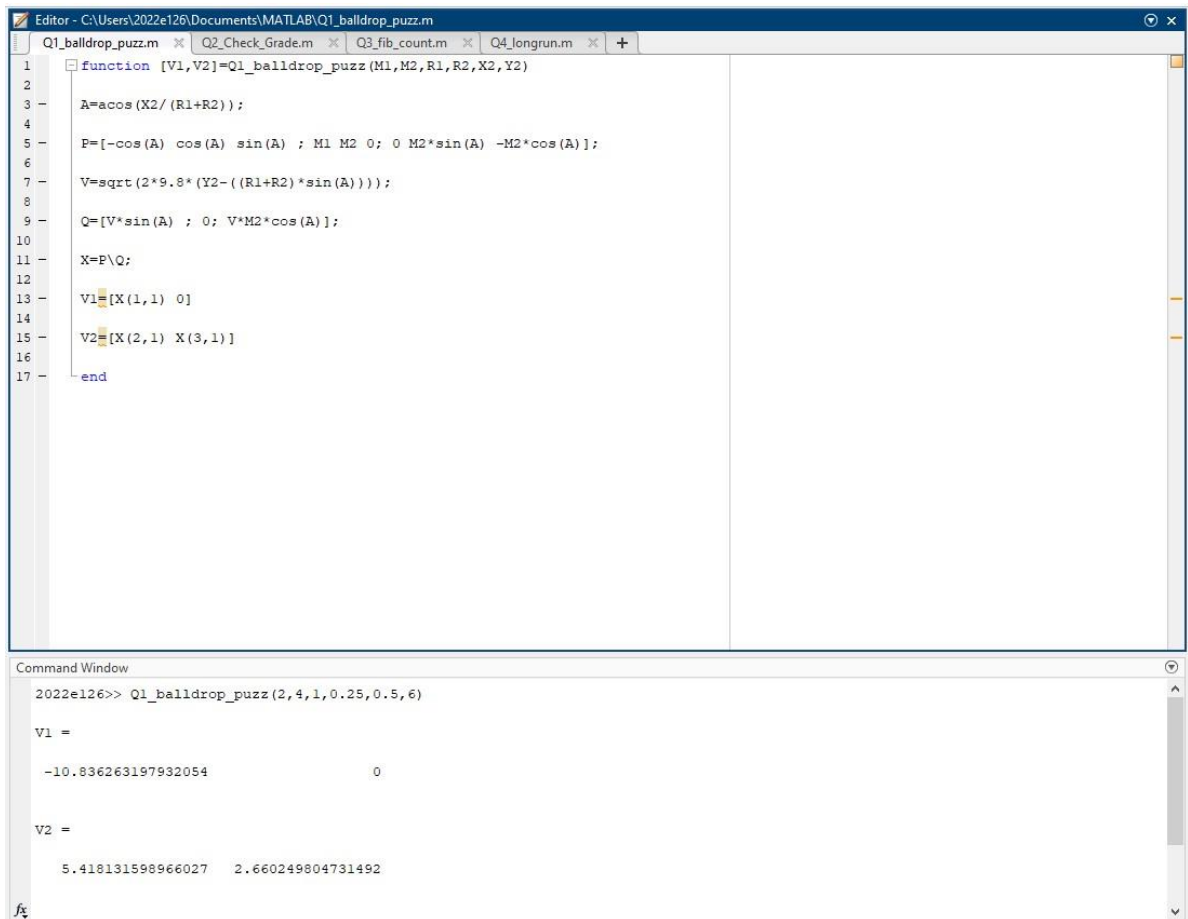


EC1011: COMPUTING
LAB 06: Domain Specific
Programming Languages
STRUCTURED PROGRAMMING

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1.



The image shows the MATLAB Editor with a script named `Q1_balldrop_puzz.m` and the Command Window below it.

Script: Q1_balldrop_puzz.m

```

1 function [V1,V2]=Q1_balldrop_puzz(M1,M2,R1,R2,X2,Y2)
2
3 A=acos(X2/(R1+R2));
4
5 P=[-cos(A) cos(A) sin(A) ; M1 M2 0; 0 M2*sin(A) -M2*cos(A)];
6
7 V=sqrt(2*9.8*(Y2-((R1+R2)*sin(A))));
8
9 Q=[V*sin(A) ; 0; V*M2*cos(A)];
10
11 X=P\Q;
12
13 V1=[X(1,1) 0]
14
15 V2=[X(2,1) X(3,1)]
16
17 end

```

Command Window

```

2022e126>> Q1_balldrop_puzz(2,4,1,0.25,0.5,6)

V1 =

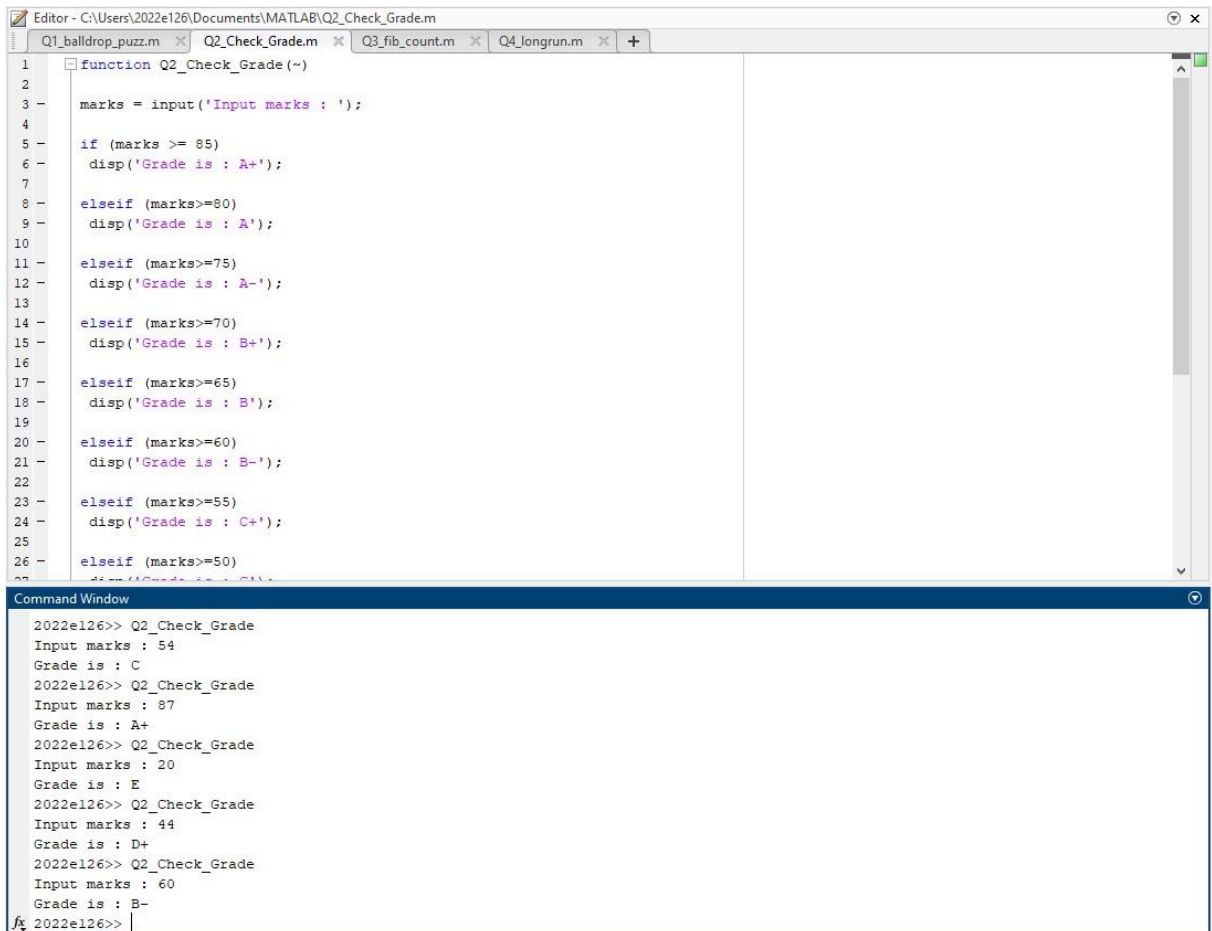
-10.836263197932054      0

V2 =

5.418131598966027 2.660249804731492

```

2.



The image shows the MATLAB Editor with a script named `Q2_Check_Grade.m` and the Command Window below it.

Script: Q2_Check_Grade.m

```

1 function Q2_Check_Grade(~)
2
3 marks = input('Input marks : ');
4
5 if (marks >= 85)
6     disp('Grade is : A+');
7
8 elseif (marks>=80)
9     disp('Grade is : A');
10
11 elseif (marks>=75)
12     disp('Grade is : A-');
13
14 elseif (marks>=70)
15     disp('Grade is : B+');
16
17 elseif (marks>=65)
18     disp('Grade is : B');
19
20 elseif (marks>=60)
21     disp('Grade is : B-');
22
23 elseif (marks>=55)
24     disp('Grade is : C+');
25
26 elseif (marks>=50)
27     disp('Grade is : C');
28
29

```

Command Window

```

2022e126>> Q2_Check_Grade
Input marks : 54
Grade is : C
2022e126>> Q2_Check_Grade
Input marks : 87
Grade is : A+
2022e126>> Q2_Check_Grade
Input marks : 20
Grade is : E
2022e126>> Q2_Check_Grade
Input marks : 44
Grade is : D+
2022e126>> Q2_Check_Grade
Input marks : 60
Grade is : B-
2022e126>>

```

3.

The MATLAB Editor window displays the code for the function `Q3_fib_count.m`. The code is as follows:

```

1 function y = Q3_fib_count(x)
2
3     p = max(x);
4     q = length(x);
5
6     fibcount = [];
7
8     A = 0;
9     B = 1;
10    n = 1;
11
12    for i = 1:q
13
14        if (x(i) == 0)
15            fibcount(n) = x(i);
16            n = n+1;
17        end
18    end
19
20    for j = 1:p
21        C = A+B;
22
23        for k = 1:q
24            if (x(k) == C)
25                fibcount(n) = x(k);
26                n = n+1;
27            end
28        end
29    end
30
31    A = B;
32    B = C;
33 end
34
35 fibcount = unique(fibcount);
36
37 y = length(fibcount)

```

The Command Window shows the execution of the function with the input `[1 2 3 4 5 6 7 8 8]`:

```

2022e126>> Q3_fib_count([1 2 3 4 5 6 7 8 8])

y =

     5

```

4.

The MATLAB Editor window displays the code for the function `Q4_longrun.m`. The code is as follows:

```

1 function val=Q4_longrun(a)
2
3     count = 1; max_count = 1; val = a(1); indx = 1;
4
5     for i = 2:length(a)
6         if a(i) == a(i-1)
7             count = count + 1;
8         else
9             count = 1;
10        end
11
12        if max_count == count
13            indx = indx + 1;
14            val(indx) = a(i);
15        end
16
17        if max_count < count
18            max_count = count;
19            val = a(i);
20            indx = 1;
21        end
22    end
23
24    if size(a,2) < size(a,1)
25        val = val.';
26    end

```

The Command Window shows the execution of the function with the input `[1 2 2 2 1 3 2 1 4 5 1]`:

```

2022e126>> Q4_longrun([1 2 2 2 1 3 2 1 4 5 1])

ans =

     2

```

