EC1011: COMPUTING

LAB 06: Domain Specific Programming Languages

STRUCTURED PROGRAMMING

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1.

Editor - C:\Users\2022e126\Documents\MATLAB\Q1_balldrop_puzz.m

Q1_balldrop_puzz.m | Q2_Check_Grade.m | Q3_fib_count.m | Q4_longrun.m

```
function [V1,V2]=Q1_balldrop_puzz(M1,M2,R1,R2,X2,Y2)

A=acos(X2/(R1+R2));

P=[-cos(A) cos(A) sin(A) ; M1 M2 0; 0 M2*sin(A) -M2*cos(A)];

V=sqrt(2*9.8*(Y2-((R1+R2)*sin(A))));

Q=[V*sin(A) ; 0; V*M2*cos(A)];

X=P\Q;

V1=[X(1,1) 0]

V2=[X(2,1) X(3,1)]

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.

Editor - C:\Users\2022e126\Documents\MATLAB\Q2_Check_Grade.m

Q1_balldrop_puzz.m | Q2_Check_Grade.m | Q3_fib_count.m | Q4_longrun.m

```
function Q2_Check_Grade(~)

marks = input('Input marks : ');

if (marks >= 85)
 disp('Grade is : A+');

elseif (marks>=80)
 disp('Grade is : A');

elseif (marks>=75)
 disp('Grade is : A-');

elseif (marks>=70)
 disp('Grade is : B+');

elseif (marks>=65)
 disp('Grade is : B');

elseif (marks>=60)
 disp('Grade is : B-');

elseif (marks>=55)
 disp('Grade is : C+');

elseif (marks>=50)
```

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.

Editor - C:\Users\2022e126\Documents\MATLAB\Q3_fib_count.m

Q1_balldrop_puzz.m | Q2_Check_Grade.m | Q3_fib_count.m | Q4_longrun.m

```
function y = Q3_fib_count(x)

 p = max(x);
 q = length(x);

 fibcount = [];

 A = 0;
 B = 1;
 n = 1;

for i = 1:q

  if (x(i)==0)
  fibcount(n) = x(i);
  n = n+1;
  end

end

for j = 1:p
  C = A+B;

  for k = 1:q
  if (x(k)== C)
  fibcount(n) = x(k);
  n = n+1;
  end
  end

  A = B;
  B = C;
end

 fibcount = unique(fibcount);

 y = length(fibcount)
```

Command Window

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

y =

     5
```

4.

Editor - C:\Users\2022e126\Documents\MATLAB\Q4_longrun.m

Q1_balldrop_puzz.m | Q2_Check_Grade.m | Q3_fib_count.m | Q4_longrun.m

```
function val=Q4_longrun(a)

 count = 1; max_count = 1; val = a(1); indx = 1;

for i = 2:length(a)
  if a(i) == a(i-1)
  count = count + 1;
  else
  count = 1;
  end

  if max_count == count
  indx = indx + 1;
  val(indx) = a(i);
  end

  if max_count < count
  max_count = count;
  val = a(i);
  indx = 1;
  end

end
 if size(a,2) < size(a,1)
  val = val.';
 end
```

Command Window

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

ans =

     2

2022e126>>
```