A3 example for a grade calculator

CP1111 has three assignments. The first is out of 40 and has a weight of 20%. The second is out of 70 and has a weight of 30%. The third is out of 20 and has a weight of 50%. Design a program to ask the user to enter their three scores, making sure the scores are valid numbers in the required bounds.

Sample run of the program

Assignment 1 mark (out of 40): ***42***
Please enter a number between 0 and 40.
Assignment 1 mark (out of 40): ***28***
Assignment 2 mark (out of 70): ***55***
Assignment 3 mark (out of 20): ***17.5***
Your overall mark is 81.32% and your grade is distinction.

Function main()

Input	Processing	Output
	a1_mark a2_mark a3_mark	overall_mark grade

Pseudocode:

```
a1_mark = get_weighted_assignment_mark(1, 40, 20)
a2_mark = get_weighted_assignment_mark(2, 70, 30)
a3_mark = get_weighted_assignment_mark(3, 20, 50)
overall_mark = a1_mark + a2_mark + a3_mark
grade = convert_mark_to_grade(overall_mark)
display “Your overall mark is” overall_mark “% and your grade is ” grade
```

Function get_weighted_assignment_mark(assignment_num, marks_out_of, weight)

Input	Processing	Output
assignment_num marks_out_of weight	prompt raw_mark	weighted_mark

Pseudocode:

```
prompt = “Assignment” assignment_num “mark (out of “ marks_out_of
raw_mark = get_number_in_range(prompt, 0, marks_out_of)
weighted_mark = raw_mark / marks_out_of × 100
return weighted_mark
```

Function get_number_in_range(prompt, minimum, maximum)

Input	Processing	Output
prompt minimum maximum		number

Pseudocode:

```
get number, displaying prompt
while number < minimum OR number > maximum
       display error message
       get number, displaying prompt
return number
```

Function convert_mark_to_grade(mark)

Input	Processing	Output
mark		grade

Pseudocode:

```
if mark < 50
      grade = “failure”
otherwise if mark < 65
      grade = “pass”
otherwise if mark < 75
      grade = “credit”
otherwise if mark < 85
      grade = “distinction”
otherwise
      grade = “high distinction”
return grade
```

NOTE: THIS IS NOT INTENDED AS A PERFECT SOLUTION, JUST A SAMPLE OF WHERE WE EXPECT A STUDENT TO BE DURING WEEK 3. A BETTER SOLUTION WOULD USE CONSTANTS, AND A LIST OF MARKS INSTEAD OF HARDCODING 3 DIFFERENT VARIABLES.