ISD Term 1 Coursework 1

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- Deadline for submission: **Friday 8th November at 17:55**. Please read the *Submitting the assignment* section at the end of this document.
- Second deadline (mark will be capped to pass mark unless there are mitigating circumstances) is Friday 22nd November 17:55.
- Any submissions uploaded after the second deadline will be capped at zero marks. No mitigation will be accepted after this date. Mitigation forms must be submitted one week after the first deadline at the latest.

Preliminaries - Important Please Read Carefully

1. Download from Moodle - Week 4:
   `term1cw1.py`.
2. Read carefully the plagiarism statement at:
   `http://www.bbk.ac.uk/registry/policies/documents/assessment-offences-policy.pdf`
   Once you have read it, add to the top of `term1cw1.py` as a multi-line comment, the following:

   ```
   I have read and understood the sections of plagiarism in the College Policy
   on assessment offences and confirm that the work is my own,
   with the work of others clearly acknowledged.
   I give my permission to submit my work to the plagiarism testing database
   that the College is using and test it using plagiarism detection software,
   search engines or meta-searching software.
   ```

   You will get **0 marks** if this is not included in your submission
3. Do not use Github or any publicly accessible site to store your work. This will be regarded as a plagiarism offence.
4. Do not be tempted to use contractor websites to find somebody to do the coursework for you.

The Coursework

Introduction to Software Development has 4 courseworks. Each coursework contributes equally to the overall coursework mark.

By doing this coursework you will get experience in validating input, building conditional statements and understanding the flow of control in a Python program.

The Questions

There are 4 questions. This coursework is marked out of 50. All questions must be answered using Python 3 programming language.

Do **not** use any Python functionality that has not been shown in the lectures, i.e. no exception handling, dictionaries, sets, etc.
Do **not** use `import` in your code.

Always keep backup copies of all assignments. If your assignment gets lost, a backup copy will make things easier for you.

1. (4 marks)
   Refactor (see Question 5 on lab sheet 4 for the definition of refactor) the conditional statement in the following program without using any `boolean` operators (note: this will increase the number of branches).

```
units = input("please input units, either mph or km/h ")
speed = int(input("please input your speed as a whole number "))

if  (units == "mph" and speed > 70) or (units == "km/h" and speed > 105):
    print("Too Fast")
else:
    print("OK")
```

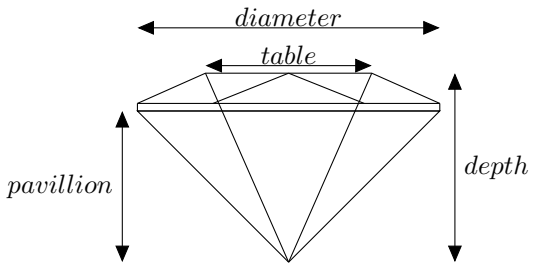
2. (8 marks)
   Refactor the following code to reduce the number of branches.

```
a = input("please input y or n or c")
b = input("please input y or n or c")

if a=="y":
   if b == "c":
      output = "OK"
   else:
      output = "Not OK"
elif a == "n":
    if b == "y"
       output = "OK"
   elif b == "n":
      output = "OK"
   else:
      output = "OK"
else:
   output = "Not OK"
print(output)
```

Hint: How many different outputs are there?
A program that is short but gives the incorrect output will be given far fewer marks than a program that is longer but gives the correct output.

3. (35 marks)
The quality of a round cut diamond is based on several characteristics. These characteristics are typically measured as a percentage ratio of the diameter of the diamond. Write a program that displays that grades a round cut diamond using the table below.



Measurement	Good Quality
table	Between 53% to 57% inclusive
pavillion	Between 42% to 43% inclusive
depth	Between 58% to 63% inclusive

- Your program must first ask for the percentage value of each characteristic in the following order table, pavillion and then depth.Follow the precise wording is shown in the examples below.
- The inputs must only be whole numbers. For validating the inputs use `isdigit()`, see Lecture 4 Slide 33.
- If all the inputs are within their ranges shown in the table above, the your program must display the following text:
`This is a good diamond`
Otherwise your program should display
`This diamond is bad`
- If any of the inputs are not whole numbers your program should display:
`You have entered at least one input incorrectly`

The following examples show the input and corresponding output:

```
Please input the table (as a percentage) of your diamond 53
Please input the pavillion (as a percentage) of your diamond 43
```

```
Please input the depth (as a percentage) of your diamond 60
This is a good diamond
```

Another example:

```
Please input the table (as a percentage) of your diamond 50
Please input the pavillion (as a percentage) of your diamond 43
Please input the depth (as a percentage) of your diamond 60
This diamond is bad
```

Input Validation Examples:

```
Please input the table (as a percentage) of your diamond fifty
Please input the pavillion (as a percentage) of your diamond 43
Please input the depth (as a percentage) of your diamond 60
You have entered at least one input incorrectly
```

Another example

```
Please input the table (as a percentage) of your diamond 50
Please input the pavillion (as a percentage) of your diamond 43.5
Please input the depth (as a percentage) of your diamond 60
You have entered at least one input incorrectly
```

Marking Scheme for Question 3

- Input entry, input validation and correct validation message displayed: 10 marks
- The overall logic behind the `if` statements used to distinguish between a good and bad diamond: 15 marks
- Correct output display for the diamond: 5 marks
- 5 marks will be awarded for the clarity of your code, this includes the following:
  - Comments.
  - Appropriate variable names.

4. (4 marks) Read through the Submitting the assignment section below. Full marks for those who follow these instructions correctly (and who have made an attempt of the 3 questions above).

Submitting the assignment:

1. Do not forget the plagiarism declaration comment at the top of your file. You will get **0 marks** if it is not there.

2. Include a further comment directly after the plagiarism declaration that has your name, the name of the programme you are taking (e.g., MSc IT, etc.), and the submission date.

3. Submit **only** your `term1cw1.py` do **not** zip your file. Do not rename this file.

4. Submission is only through Moodle.

5. To submit your file, follow the Upload Submission for Term1 - Coursework1 link on the ISD Moodle page.