

## Task 1.2A – Notes and Onsets Detection

**Note:** Go through this file only after you have gone through the tutorials provided in [Resources.pdf](#) document in the *1. Theory* folder.

Please find the *Task\_1\_2A.py* file in the folder *2. Practice/Workspace*.

Modify the *Task\_1\_2A.py* to accomplish the following:

**Given:**

A set of three audio files, each contain multiple Notes placed adjacent to each other.

- These audio files are provided in *2. Practice/Workspace/Task\_1.2A\_Audio\_files* folder. An example test audio file **Audio\_1.wav** is shown in Figure 1.

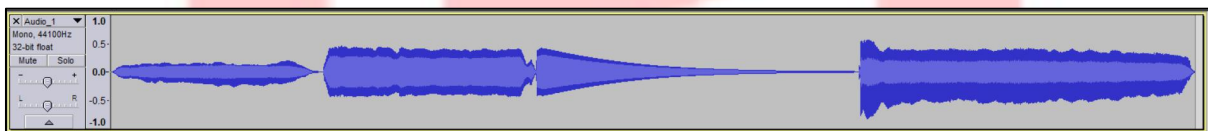
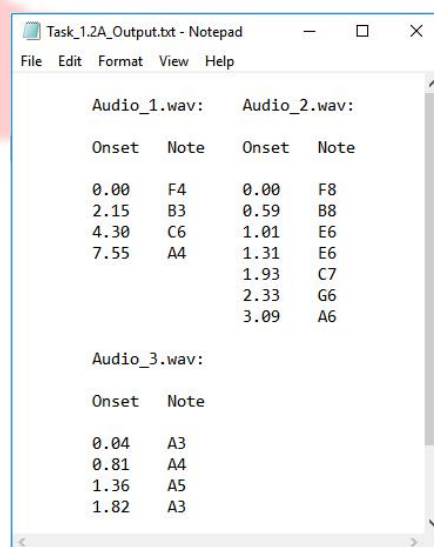


Figure 1: Example Audio File, Audio\_1.wav

- Notes in each audio file with their Onsets (start time of Notes) are listed in **Task\_1.2A\_Output.txt** file. This text file is provided in *2. Practice/Workspace/Task\_1.2A\_Audio\_files* folder. Figure 2 shows the content of **Task\_1.2A\_Output.txt** file.



Audio_1.wav:		Audio_2.wav:	
Onset	Note	Onset	Note
0.00	F4	0.00	F8
2.15	B3	0.59	B8
4.30	C6	1.01	E6
7.55	A4	1.31	E6
		1.93	C7
		2.33	G6
		3.09	A6

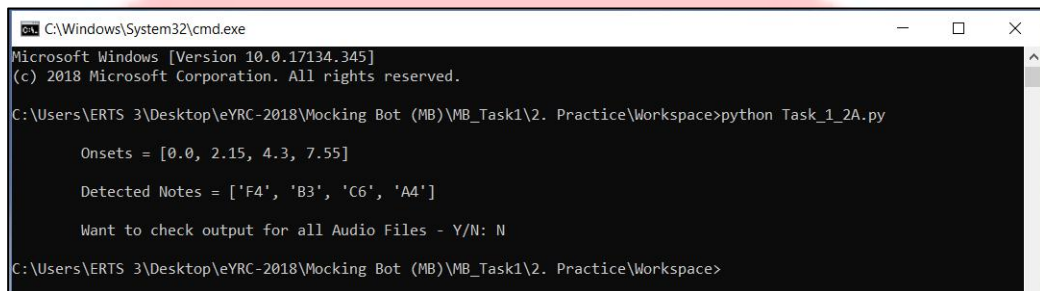
Audio_3.wav:	
Onset	Note
0.04	A3
0.81	A4
1.36	A5
1.82	A3

Figure 2: Task\_1.2A\_Output.txt file

## Problem Statement:

A “snippet” of outline code is given in *Task\_1\_2A.py* file.

- Teams modify the *onset\_detect(audio\_file)* function to take a **test audio file** as **input** and **return the Identified Notes with the Onsets for each Note (up to two decimal places)**.
- For example, given the test audio file in Figure 1 as input, the output will look as shown in Figure 3.



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.17134.345]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\ERTS 3\Desktop\eYRC-2018\Mocking Bot (MB)\MB_Task1\2. Practice\Workspace>python Task_1_2A.py

Onsets = [0.0, 2.15, 4.3, 7.55]

Detected Notes = ['F4', 'B3', 'C6', 'A4']

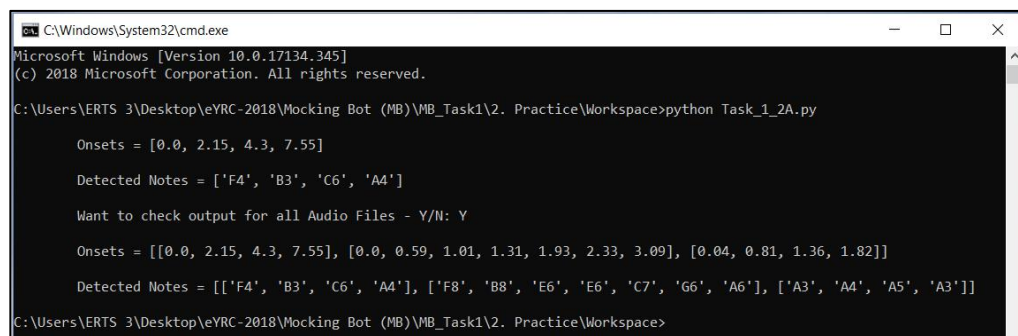
Want to check output for all Audio Files - Y/N: N

C:\Users\ERTS 3\Desktop\eYRC-2018\Mocking Bot (MB)\MB_Task1\2. Practice\Workspace>
```

Figure 3: Output of **Task\_1.2A** for **Audio\_1.wav** file

## Instructions:

- Teams are **not allowed** to import any **library/module** related to **Audio Processing** (apart from the ones installed in **Task 0**) in *Task\_1\_2A.py* file. If found so, it will **lead to disqualification**.
- Do not edit the **main** function in *Task\_1\_2A.py* file. Teams have to modify **only** the *onset\_detect(audio\_file)* function.
- The **main** function, by default displays output for the single audio file, **Audio\_1.wav** and asks the user whether to check the output for rest audio files.
- To check the output for all the test files, type “Y” and press Enter. Program shows the output of Detected Notes with the corresponding Onsets for all audio files as shown in Figure 4.



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.17134.345]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\ERTS 3\Desktop\eYRC-2018\Mocking Bot (MB)\MB_Task1\2. Practice\Workspace>python Task_1_2A.py

Onsets = [0.0, 2.15, 4.3, 7.55]

Detected Notes = ['F4', 'B3', 'C6', 'A4']

Want to check output for all Audio Files - Y/N: Y

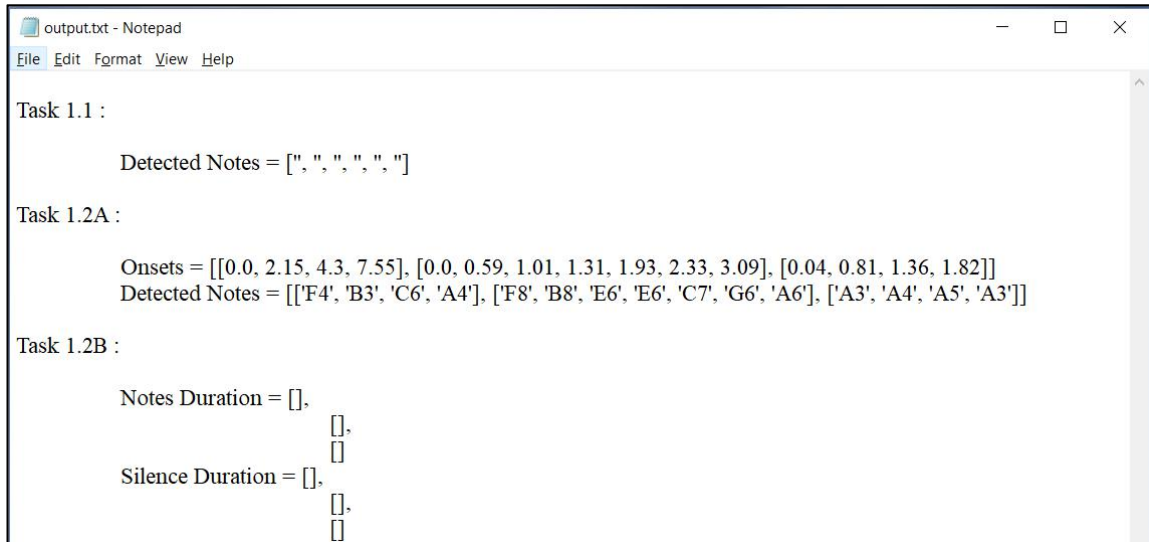
Onsets = [[0.0, 2.15, 4.3, 7.55], [0.0, 0.59, 1.01, 1.31, 1.93, 2.33, 3.09], [0.04, 0.81, 1.36, 1.82]]

Detected Notes = [['F4', 'B3', 'C6', 'A4'], ['F8', 'B8', 'E6', 'E6', 'C7', 'G6', 'A6'], ['A3', 'A4', 'A5', 'A3']]

C:\Users\ERTS 3\Desktop\eYRC-2018\Mocking Bot (MB)\MB_Task1\2. Practice\Workspace>
```

Figure 4: Output of **Task\_1.2A** for All Audio Files

- Teams can verify the output with the help of **Task\_1.2A\_Output.txt** file given.
- Once done with the Task, run **Test.py** provided in **2. Practice/Workspace** folder. It will show the output of your program on Command Prompt and also generate **Output.txt** file in the same folder as shown in Figure 5.



```

Task 1.1 :

    Detected Notes = ["", "", "", "", ""]

Task 1.2A :

    Onsets = [[0.0, 2.15, 4.3, 7.55], [0.0, 0.59, 1.01, 1.31, 1.93, 2.33, 3.09], [0.04, 0.81, 1.36, 1.82]]
    Detected Notes = [['F4', 'B3', 'C6', 'A4'], ['F8', 'B8', 'E6', 'E6', 'C7', 'G6', 'A6'], ['A3', 'A4', 'A5', 'A3']]

Task 1.2B :

    Notes Duration = [],
                    [],
                    []
    Silence Duration = [],
                    [],
                    []
    
```

Figure 5: Output.txt on running Test.py for Task 1.2A

**Note:** If you are not getting any output, check the following:

1. You are using appropriate python version (**2.7.x**) on **Windows OS only**.
2. **Task\_1\_2A.py** file is present in the same folder (Do not change the name of .py file, It must be **Task\_1\_2A.py**)
3. **Task\_1.2A\_Audio\_files** folder is present in the same folder (Do not change the name of folder or audio files provided in that folder)
4. Input and output argument of **onset\_detect** function is as specified (Do not change the name of function, It must be **onset\_detect**)

**NOTE:** Team **should not** modify anything outside **onset\_detect** function. If team wishes to create some helper function to solve the task, they must define it above **onset\_detect** function and call in **onset\_detect** function.