Ghana Hacks

Program Details

Organizers: Cynoc Boahene, Samuel Opoku-Agyemang, Jessica Quaye, Samuel Appiah Kubi, Jesse Odame Phillips, Sena Katako

Date: 11/01/2017

Venue: Kumasi (Opoku Ware Senior High School)

Overview & Purpose

This program aims to introduce and educate Ghanaian High School students and college students to the field of computer science. The program would also serve as an avenue for these college and high school students to network with some great Ghanaian minds abroad. We hope that by the end of the program, participants would go home refurbished with adequate information about computer science and other important disciplines needed for growth in the country.

Content

1. Computer Programming
2. Mathematics
3. Problem Solving

Objectives

1. Introduce students to problem solving through the use of Math and Programming
2. Making Computer Science exciting for these young minds

3. Creating connections and mentorship for the participating students

Quick Info

Here is a list of some quick information about the D-Day

Participating Schools and *contact persons*

1. Opoku Ware Senior High School - *Mrs Emilia Dapaa (0244825487)* - 10 students
2. Prempeh Senior High School - *Mr.XYZ()* - 10 students
3. St Louis Senior High School - *Mr Asare (0548183561)* - 10 students
4. Yaa Asantewaa Senior High School - *(0245171879)* - 10 students
5. St. Hubert Seminary Senior High School - *Regan (0241782056)* - 10 students

Sponsor

1. Primetime

Competition Prizes

1. First Prize- 300 *(We can possibly make a plaque for the winning school)*
2. Second Prize - 200
3. Third Prize - 100

Breakfast & Debrief (8am - 9am)

All Consultants are supposed to be at the venue by 8am. The following activities would take place between the time specified

Activities

1. *Install Python on all computers*
2. *Double check that all computers are working and python is installed on all the computers*
3. *Confirm that students are on their way to the venue*

Welcome & Icebreakers (9am - 9.30am)

Put them in Groups of 4 and tell each person to mention their name + (an adjective that describes them) as well as every other person who mentioned their name before them.

Introduction to Python - I (9:30a - 12p)

Familiarizing themselves with the python/HTML syntax
The link to the presentation:
https://docs.google.com/presentation/d/18U2IgW9dqxQmO1ihrmKxDCqYoRTYFlpryySfOxtYXxY/edit?usp=sharing

1. Print Statements eg. Hello World! (Sena)
2. Variable and Assignment - (Sena)
3. Working with Strings(Cynoc)
4. Math Library, Modulo and If statements - (Samuel)
5. Loops (For loops and while loops) and Lists - *(Jesse)*
6. Function - (Jesse)
7. Advanced Topics (Brief introduction to the general use cases of Binary Search, Depth First Search, Hashing, Recursion, Object Oriented Programming, Searching Algorithms etc) --Samuel

Lunch Break (12p - 12:45p)

Eating good food

Hackathon Session (1p - 3p)

4 problems (one from each mentor). The questions should be simple, but they should involve some level of logical reasoning to arrive at an efficient answer.

You can add your proposed solution or suggested function headers here:

https://codepad.remoteinterview.io/AIJMJRIVVX

Question 1 (Sena)

If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23.

Find the sum of all the multiples of 3 or 5 below 1000.

Question 2 (Jesse)

Mr. X has a vast collection of electronic music albums. Each album has an assortment of different tracks, in no particular order. Due to how large his music collection is, Mr. X has not been able to listen to all of the songs in his collection. He wants to be able to create a program that looks at an album and returns a list of the songs he has not listened to.

Mr. X was able to create a helper function ‘check_plays’ that returns 1 if a song has been played before and returns 0 otherwise. He now needs to write the function ‘unplayed_songs’ that takes in the album as a list of songs, and returns a list of the songs in that album that have not been listened to before.

Write your implementation of ‘unplayed_songs’. You can use the function ‘check_plays’ in your solution.

```
def unplayed_songs(album):
    """ Returns: a list of unplayed songs in the album.

    Parameter: album - a list of song names.
    Precondition: album is a list of strings.

    """
    Pass

def check_plays(song):
    """ Returns: 1 if the song has been played before, 0 otherwise.

    Parameter: song - name of the song
    Precondition: song is a non-empty string

    """
    # You should assume that this function works as it should as long as preconditions are
satisfied.
    pass
```

Question 3 (Samuel)

Write a computer program to test if a number is prime or not.

(Think about how you can make it faster)

```
def is_prime(n):
        """Returns True if n is prime and False otherwise"""
        Pass
```

Question 4 (Cynoc)

"Write a program that prints the integers between 1 and 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz"."