Lesson 1 Python: Interactive Fiction

Introduction
Interactive fiction is a story told with software. We will be using the programming language Python. The program will simulate a place and some actions, players use text commands to control characters and influence the environment. You will be creating a story with a setting and characters that you love. Learn more about Interactive Fiction here.

Equipment
✦ Computer with Internet
✦ Paper and pencil

Vocabulary
✦ Pair programing – two programmers working one program on one computer.
✦ Interactive Fiction – a computer programed story controlled by text commands.
✦ Plot – events that make up a story.
✦ Setting – the environment in which your story takes place. The setting can include specific information about time and place or can simply be descriptive (eg. ✦ Character – a person in a novel, play, movie or Interactive Fiction.

Procedure
1. Form pairs as instructed by your teacher. You will be completing this Unit with your partner. In Pair Programing you will work together on one computer alternating who is “driving” with the keyboard and mouse. Professional coders work together to reduce errors and increase creativity.

2. All stories start with a plot, read through The Seven Basic Plots. Choose a plot for your story and write it it down.

3. Choose a setting and write it down.
4. Choose the **character** your user will play as, you may also have other characters your user interacts with. Write down your characters.

5. Now the fun part! Using your plot, setting and characters write a short story. Here is a suggestion from author Rebecca Makkai.

   Most stories we tell in real life are under 500 words. You're at a party and suddenly you have the floor. You throw out your little story like a grenade. “Once I knew a guy who...” And if you have any social graces at all, you probably keep it under 500 words. So my advice would be this: Just tell a story, quick while they're still listening.

6. In lesson 2 you will build a story map!
Lesson 2 Python: Story Map

Introduction
Interactive fiction is a computer program that transports a player through an interesting environment. The player uses text commands to control characters and influence the environment. You will create a story with a setting and characters that you love. Learn more [here](#).

Equipment
✦ Computer with Internet
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Vocabulary
✦ Pair programing – two programmers working one program on one computer.
✦ Interactive Fiction – a computer program story controlled by text commands.
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✦ Setting – is the environment in which your story takes place. The Setting can include specific information about time and place or can simply be descriptive (eg. a lonely farmhouse on a dark night).
✦ Character – a person in a novel, play, or movie.
✦ Story Map – graphical way to represent the flow of your Interactive Fiction.
✦ Decision Point – place in your story where the player need to make a choice.

Procedure
1. Form pairs as instructed by your teacher. You will be completing this Unit with your partner. In **Pair Programming** you will work together on one computer alternating who is “driving” with the keyboard and mouse. Professional coders work together to reduce errors and increase creativity.

2. With your paper and pencil map out your story. Take a look at the **story map** examples below.
3. It will take several drafts to get a great **story map**. Your final map will be easy to read and it will clearly show each of your **decision points**.

In the next lesson you will make your story map into an online flowchart!
Computer Science Adventure

Obscurity

Boy or Girl

Poor or Rich

Poetry or Science

Love or Babbage

No Study the Difference Engine Yes

Horse or Translate

You go down in history has the first computer programmer!
Lesson 3 Python: Flowchart

Introduction
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Equipment
✦ Computer with Internet
✦ Paper and pencil

Vocabulary
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✦ Story Map – graphical way to represent the flow of your Interactive Fiction.
✦ Decision Point – place in your story where the player need to make a choice.
✦ Flowchart – a diagram that represents a process or algorithm. The steps are represented by a series of boxes or other specialized symbols, then connected with arrows.

Procedure
1. Form pairs as instructed by your teacher. You will be completing this Unit with your partner. In **Pair Programing** you will work together on one computer alternating who is “driving” with the keyboard and mouse. Professional coders work together to reduce errors and increase creativity.
2. Log on to https://www.gliffy.com and make an account.

3. Write your story map as a flow chart in Gliffy. Use the rectangles for start and end points, diamonds for decision points.

4. In lesson 4 you will start your program.
Lesson 4 Python: repl.it

Introduction
What is Python? Python is a clear and powerful object-oriented programming language. Some of the Python’s highlights:

- Uses an elegant syntax, making the programs you write easier to read.
- Is an easy-to-use language that makes it simple to get your program working.
- Comes with a large standard library that supports many common programming tasks such as connecting to web servers, searching text with regular expressions, reading and modifying files.

Here is a great link with more about Python.
https://www.python.org/doc/essays/blurb/

In this lesson you will get a repl.it account.

Equipment
- Computer with Internet

Vocabulary
- Pair programing – two programmers working one program on one computer.
- Python – is a widely used general-purpose, programming language. Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code than C++ or Java.
- Interactive Programing Environment – allows a programer see the results of their program while they work on it. Scratch Programing is a good example.
- repl.it – an online Interactive Programing Environment.
- Editor – where you type your code.
- Console – when you run your program the results print here.

Procedure
1. Repl.it is a web based Interactive Programing Environment. In this lesson you will make a repl.it account.

2. Go to https://repl.it/ and make an account. Click on and click on and follow the directions.
3. Let's look at repl.it, it has two major parts, the **editor** where you write your code and the **console** where you print the results of your code.

4. In lesson 5 you will start writing your code!
Lesson 5 Python: Program Comments

Introduction
Commenting involves placing Human Readable Descriptions inside of computer programs detailing what the Code is doing. Proper use of commenting can make code maintenance much easier, as well as helping make finding bugs faster. Further, commenting is very important when writing functions that other people will use. Well documented code is as important as correctly working code. In this lesson you will write some comments and save your code.

Equipment
✦ Computer with Internet

Vocabulary
✦ Pair programing – two programmers working one program on one computer.
✦ Interactive Programing Environment – allows a programer see the results of their program while they work on it. Scratch Programing is a good example.
✦ repl.it – an online Interactive Programing Environment
✦ Editor – where you type your code.
✦ Console – when you run your program the results print here.
✦ Comments – words written for humans to describe computer code.

Procedure
1. repl.it is a web based Interactive Programing Environment. Go to https://repl.it/ and log in to your account.

2. Let’s write your first code. Click on the in the upper right. Scroll down and click on and then on Python.
It will look like this.

On the left is the Python editor and on the right is the console.

3. In computer programming comments are words written for the programmer, they are added with the purpose of making the computer code easier to understand. In Python the # is used before a comment. Open up a new Python repl.it file and call it Interactive Fiction 1.0.

Write comments for:  #name of the code (use the name of the program)
#Interactive Fiction
#your name
Here is mine.

4. Click the save button, repl.it saves your work automatically, but it gives it an assigned name, like /BmXZ/0. Click your user name and choose session.

5. In lesson 6 you will print!
Lesson 6 Python: Output

Introduction
When a computer program want to communicate with a user, it can send output to the console. In python the command is print.

In this lesson you will print to the console.

Equipment
✦ Computer with Internet

Vocabulary
✦ Pair programing – two programmers working one program on one computer.
✦ Editor – where you type your code.
✦ Console – when you run your program the results print here.
✦ Comments – words written for humans in computer code.
✦ Output– data sent to the user.

Procedure
1. Go to https://repl.it/ and log in to your account and open your Interactive Fiction program.
2. In the editor below your comments from the last lesson, type this code.

```
print "Hello World!"
```

Does it look like this?

```
1 # Ada Lovelace a Computer Adventure Story
2 # The true story of Ada Lovelace
3 # Scott Lukesh
4
5 print "Hello World!"
```
3. Now replace “Hello World!” with the title of your story and click save. Don’t worry if you are not sure about the title, you can always change it later.

4. Write the code for you beginning of your story.

   ```python
   # Ada Lovelace a Computer Adventure Story
   # The true story of Ada Lovelace
   # Scott Lukesh

   print "Ada Lovelace a Computer Adventure"
   print "Welcome to London, England, the year is 1815."
   ```

   Here is mine.

5. In lesson 7 you will learn how to have the user input information!
Lesson 7 Python: Input

Introduction
When a computer program wants to get information from a user, it needs to ask for input. In Python, the command is `raw_input()`.

In this lesson, you will get information from users for your program.

Equipment
✦ Computer with Internet

Vocabulary
✦ Pair programming – two programmers working on one program on one computer.
✦ Output – data sent to the user.
✦ Input – data sent from the user to the computer program.

Procedure
1. Go to https://repl.it/ and log in to your account and open your Interactive Fiction program.

2. In the editor type the code for your decision point question. Now add `answer = raw_input()`. Here is mine.

```python
# Ada Lovelace a Computer Adventure Story
# The true story of Ada Lovelace
# Scott Lukesh

print "Ada Lovelace a Computer Adventure"
print "Welcome to London, England, the year is 1815."
print "Would you like to be a boy or a girl?"
print "Type b for boy or g for girl."
answer = raw_input()
```

3. In lesson 8 you will learn how to use the input!
Lesson 8 Python: Decisions

Introduction
A decision is when a program has more than one choice of actions depending on a variable’s value. Think of a traffic light. When it is green, we continue our drive. When we see the light turn yellow, we reduce our speed, and when it is red, we stop. These are logical decisions that depend on the value of the traffic light.

In this lesson you will use an **if statement** to evaluate the user’s input.

Equipment
- Computer with Internet

Vocabulary
- Pair programing – two programmers working one program on one computer.
- Decision Point – place in your story where the player need to make a choice.
- “=” – an assignment operator (this is when you **set/make** a variable equal to something, ie x=10).
- “==” – an equality operator (it checks the condition of a variable, to see if it **is** equal to something).
- If statement – The general Python syntax for a simple **if** statement is

  ```
  if condition:
   indentedStatementBlock
  ```

  If the condition is true, then do the indented statements. If the condition is not true, then skip the indented statements.

Procedure
1. Go to [https://repl.it/](https://repl.it/) and open your Interactive Fiction program. Last lesson our code looked like this.
2. Let's add an If state to evaluate the raw_input. I am going to add

```python
if answer == "b":
    print "boy"
else:
    print "girl"
```

3. In the editor type your own if statement for your story. Run your code to see if it works.

4. What does the computer do when it sees this piece of code? First it prompts the user for an answer with the statement `answer = raw_input`. Next it reads the line `if answer == "b":`. If answer is equal to b than Python runs the line `print "boy"`. Otherwise python runs the line `print "girl"`. 
Python looks at whether the expression `== “b”` is true or false. An if statement is followed by an indented block of statements that are run when the expression is true. After the if statement is an optional else statement and another indented block of statements. This 2nd block of statements is run if the expression is false. Expressions can be tested several different ways, they are called conditionals. Here is a table of all of them:

<table>
<thead>
<tr>
<th>operator</th>
<th>function</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;</td>
<td>less than</td>
</tr>
<tr>
<td>&lt;=</td>
<td>less than or equal to</td>
</tr>
<tr>
<td>&gt;</td>
<td>greater than</td>
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<tr>
<td>&gt;=</td>
<td>greater than or equal to</td>
</tr>
<tr>
<td>==</td>
<td>equal</td>
</tr>
<tr>
<td>!=</td>
<td>not equal</td>
</tr>
</tbody>
</table>

5. In lesson 9 you will learn how to write and call a function!
Lesson 9 Python: Functions

Introduction
A function is a block of organized, reusable code that is used to perform a single, related action. Functions provide better modularity for your application and a high degree of code reusing. As you already know, Python gives you many built-in functions like print(), etc. but you can also create your own functions. These functions are called user-defined functions.

In this lesson you will turn your output, input and if statements into functions.

Equipment
✦ Computer with Internet

Vocabulary
✦ Pair programing – two programmers working one program on one computer.
✦ Function – reusable block of code.

Procedure
1. Go to https://repl.it/ and open your Interactive Fiction program.

2. Functions are ease to make, like all of Python you just need to indent the contents of the function.

```
def introduction():
    print "Ada Lovelace a Computer Adventure"
    print "Welcome to London, England, the year is 1815."
    print
    boyOrGirl()
```

Function facts and conventions:

```
def stands for define, as a Python programmer you can define your own function.
```

The name of this function example is introduction, when you name a Python function use lowercase and complete words introduction is better than intro.
choose names that describe the function, like poerty_science and use the underscore “_”, not spaces, to separate words.

After the name you write “()”: in the future you will fill the”()” with parameters(arguments).

Finally you indent and write the code.

3. Once you have written your function you can call it from anywhere in the program. In this example the function boy_girl() is called in the introduction() function. When boy_girl() is called it then is executed(run).

```python
5  def introduction():
6      print "Ada Lovelace a Computer Adventure"
7      print "Welcome to London, England, the year is 1815."
8      print
9      boy_girl()
10     
11  def boy_girl():
12      print "Would you like to be a boy or a girl?"
13      print "Type b for boy or g for girl."
14      answer = raw_input()
15      if answer == "g":
16          print "girl"
17          rich_poor()
18      else:
19          print "boy"
20          obscurity()
```

4. Now add your first function to the end of you code like this.

```python
82      print "Well done!!"
83     introduction()
```

Line 84 will call the function introduction() and the program will begin!

5. In lesson 10 you will write your Interactive Fiction program!
Lesson 10 Python: Story Gallery Walk

Introduction
You have learned a lot of Python, look at all of the vocabulary! Now you will put it altogether.

In this lesson you will finish you Interactive Fiction program and share it with the other students in a Gallery Walk.

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```python
if condition:
    indentedStatementBlock
```

If the condition is true, then do the indented statements. If the condition is not true, then skip the indented statements.

Function – reusable block of code.

**Procedure**

1. Open my Interactive Fiction program [https://repl.it/BmXZ/26](https://repl.it/BmXZ/26), you have seen parts of it, here is the complete program. Play it until you are a computer programer. I have written lots of comments to help explain how the program works.

2. Finish your program and share it with your class! [https://repl.it/](https://repl.it/)