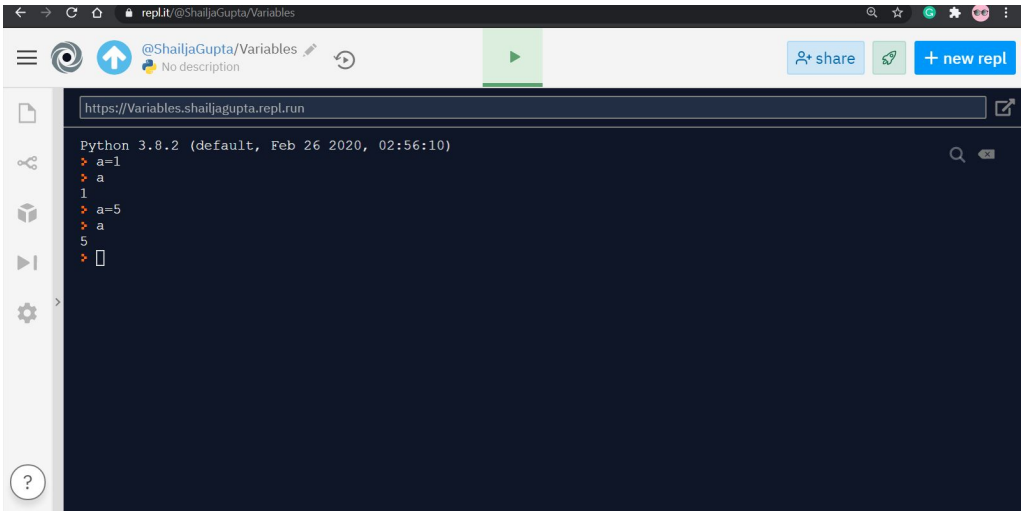
Session Code	CODR-912-BC-002
Module	Basic
Teaching Unit	Variables and Datatypes
Learning Outcome	Concept of variable, rules of naming a variable, data types: int, float, String; Relational Operators; writing programs to apply all the concept
Resources	Teacher: 1. Laptop along with audio and video exchange 2. Notebook and Pen(To note any development from session) Student Resources 1. Laptop along with audio and video exchange 2. Notebook and Pen(To keep note of important parts in the session)
Duration	50 Mins

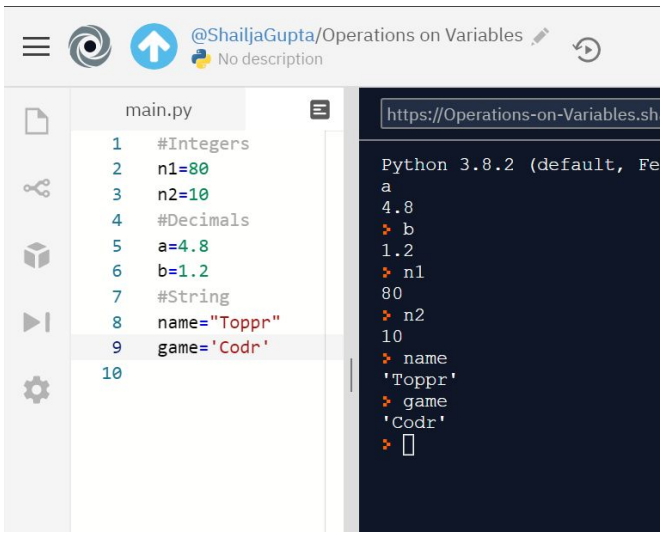
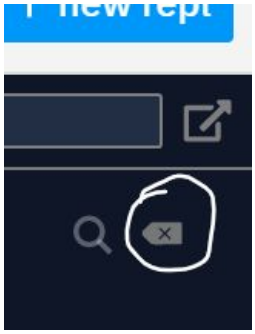
Structure	**Warm-up** **Pace-up Activity** **Knowledge Transfer** **Student Led Activity** **Short Quiz** **Heads up tip for next class**	2 Mins 5 Mins 10 Mins 20 Mins 8 Mins 5 Mins

Step	Say	Perform
Warm up (2 Mins)	Hi *student name*, how are you? Are you excited for the class? Do you remember the last class?	Try to make the student speak. Engage with the student in conversation.
Interaction (5 Mins)	In the last class, we installed Python and coded in its IDLE. We used the print function with escape characters and also learned mathematical operators.	
	Do you remember what the modulus operator does? Yes, it is used to find the remainder. Do you remember what the double forward slash does? Yes, it is used to find the quotient. Today we will learn about variables and Datatypes.	Teacher Activity 1: Repl.it
Teacher shares the screen and open Repl.it and maximize the console portion		
		

Knowledge Transfer	**Variables are like containers which can be used to store something.** And that container is actually some part of the computer's memory. Thus, a variable is a unique memory location in the computer which holds the value we provide it. Now, if we need the value of a variable for some work, we have to tell the memory location of the variable. For that we give a name to the variable. Example, if I write a=1 Here, a is the **variable name** and 1 is the value of the variable. Now, if we want to store something else in the variable we can very well do it a=5 The value of the variable is changed to 5,now. The word **variable** in english means which can change.	Give and ask for examples of containers in their real life. Give the analogy of container and its content, with variable and its value. Give the analogy of using the same container to store different objects.
Naming variables	We can name the variable almost anything we like. E.g. num=45 n3=98 **It can be a combination of letters and numbers, but must start with a letter only.** **Apart from letters and numbers we can also have underscore in the variable name.** Apart from underscore we cannot have any other special character in variable name not even space	Show different examples. Prompt the student to suggest variable names

	E.g. number_3=890	
	Ok, those are some simple rules to follow while naming a variable, right? There is one more very important rule to keep in mind. **We can't use keywords as variable names.** **Keywords** are words which have some special meaning to the computer. These words are reserved to do some particular thing only, so using them as variable names will confuse the computer.	Ask the student to repeat the rules.
	Let's try to create a variable as: *class=9* And let's print it. See you will get an error. This is because the word "class" holds special meaning to Python and we can't use it as a variable. So class is a keyword.	Prompt the student to answer. Show how python throws error if we use class as a variable name.
Data types	Ok, now that we know the rules, now, let's create some variables. b=10 and c=2 The variables b and c are storing numbers and that too integers. So, the **data type** of these variables is **int**	Tell them that in other languages, we first need to **declare** a variable, i.e. telling the computer what kind of data, we are going to store in it.

	Data type of a variable means the type of data that it is storing, Here, **int** stands for integers. Let's see what are the different data types we can have: **int:** like you know stands for integer numbers Then we have a float that stores the decimal number. Do you remember another word for decimal number?? Yes it's a floating point number because of its decimal point.	Create different variables to show different data types. Remind the kid that they have come across the term floating point in the last class.
	We can even store text in a variable, *Just keep in mind that it must be enclosed within either single or double quotes.* E.g. t="toppr" Now, the data type of t is **String**	Remind the student they used single and double quotes in the print function to display text.
	Great, so let's revise whatever we learnt up till now.	
Ask the student to share their screen, and ask them to click on Student Activity 1		
	Now, you have to declare some variables. Try solving these activities.	Student Activity 1: Variables Guide the student to complete all activity.
• **Ask the student to stop screen sharing** • **Share your screen and open repl.it**		
	We will now do some operations on these variables. Like you declared some variables, I have also assigned some variables of my own.	Teacher Activity 2: Operations-on-Variables

		Run the repl and call all the variable in the console section You can clear the console using this button on top right corner: 
	We can use the print function to display the value of the variables too. So you can remember this as anything written within quotes in print function is displayed as it is and for thing not written within quotes,its value is displayed (like variables)	Show examples of the same. a=90 print(“a”) a print(a) 90
	Do you remember all the mathematical operators we learnt in last class. Let’s try them on variables of data type int and float.	Show all the operations that can be done on the variables.
	We can store the result of an operation in another variable also. *Use and show the use of all these operators: + ,- ,* ,/ ,// ,%*	Show with different examples how a variable can store results of an operation.
	We can even compare variables with operators called Relational operators. Remember Relational operators tell the relation between two things. Greater than (>) or Less than(<) symbols are used as operators two compare two numbers.	Show how to compare two numbers using these operators. The results will be True or False.

	Other relational operators are, • Greater than or equal to: >= • Smaller than or equal to: <= • Equal to: == • Not equal to: !=	Explain each of them.
	Notice the **double equal to** symbol is used to **compare** if two things are equal. While a **single equal to** symbol is used while **assigning value to a variable,** so it is an **assignment operator.**	
• **Stop sharing screen** • **Ask the student to share the screen and click on Student Activity 2**		
	Let's solve these activities one by one.	Student Activity 2: Operation on Variables
• **Help the student through each activity** • **Difference between quotient and result of division is using // and / operator respectively**		
• **Help the student to stop sharing the screen**		
Revision	We learned so much in today's class, right? Let's recall: • Variables • Rules of naming Variables • Keywords • Data types: int, float, String • Mathematical operation on variables of Data type int and float • Displaying variable using print function	Briefly describe each of these
Headup for next class	In the next class we will build upon this knowledge and will learn about different types of operators and data types and will start a project too. I am sharing a short quiz for your revision. Practice whatever we have learned uptil now, in the IDLE.	Student Activity 3: Quiz
BID GOODBYE & END CLASS		

Resources:

Activity	Name	Links
Teacher Activity 1	Repl link	https://repl.it/@TopprCodr/ZanyMeanKeygens#main.py
Student Activity 1	Variables	https://repl.it/@TopprCodr/Variables
Teacher Activity 2	Operation on variables	https://repl.it/@TopprCodr/Operations-on-Variables
Student Activity 2	Operations on Variables	https://repl.it/@TopprCodr/Variable-Operation
Student Activity 3	Quiz	https://forms.gle/WDVQw7niYiECnghU6