ELEC 390 – Lab 01

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Question 1)

The native Python operator '+' combines two lists as displayed in Figure 1.

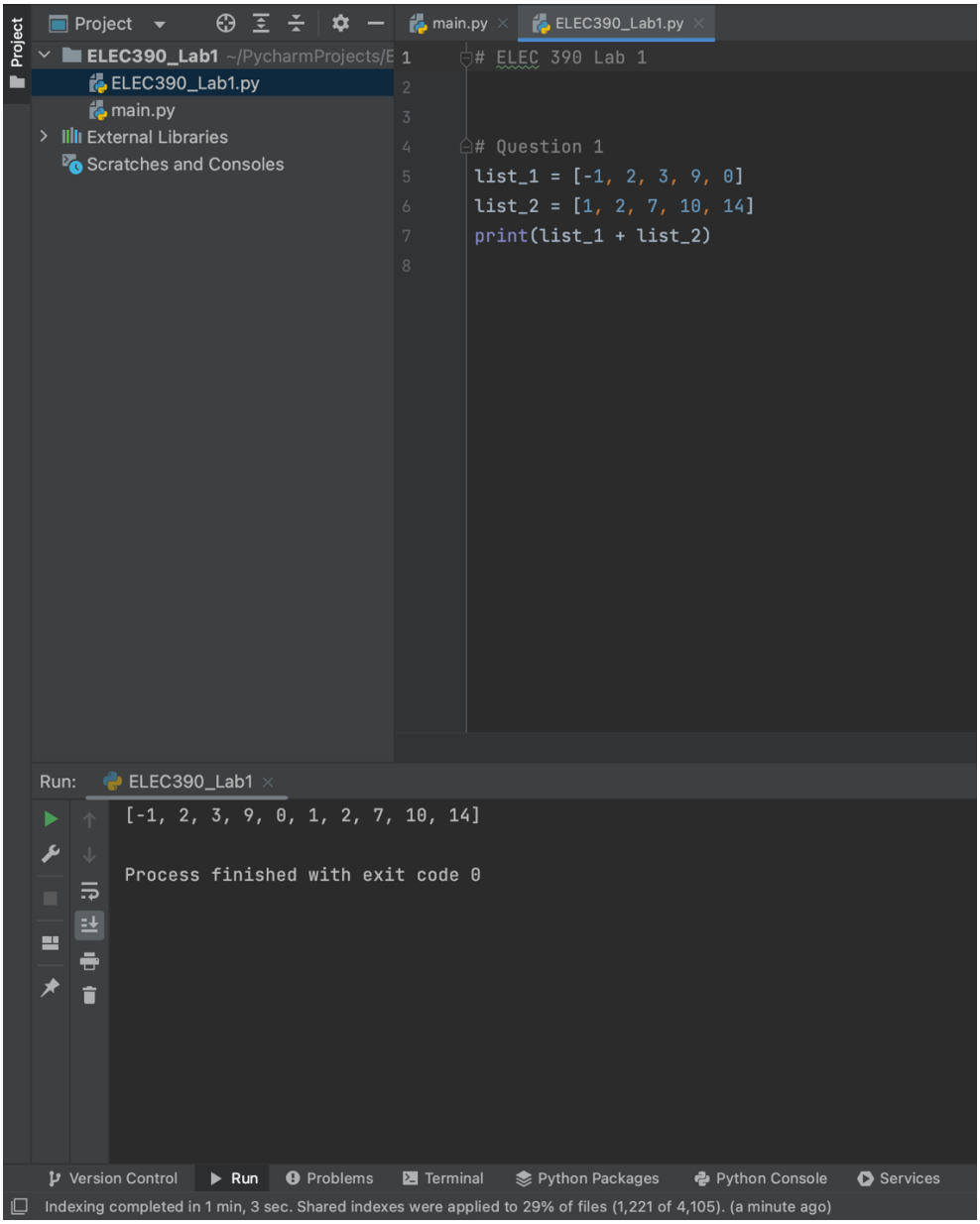

Figure 1: PyCharm code for Question 1 using the '+' operator to combine two lists.

Question 2)

In order to sum two lists a with the '+' operator a for loop is necessary. The for loop iterates through each index of the array adding the two values found at corresponding indices of each list. Figure 2 displays the loop as well as the output.

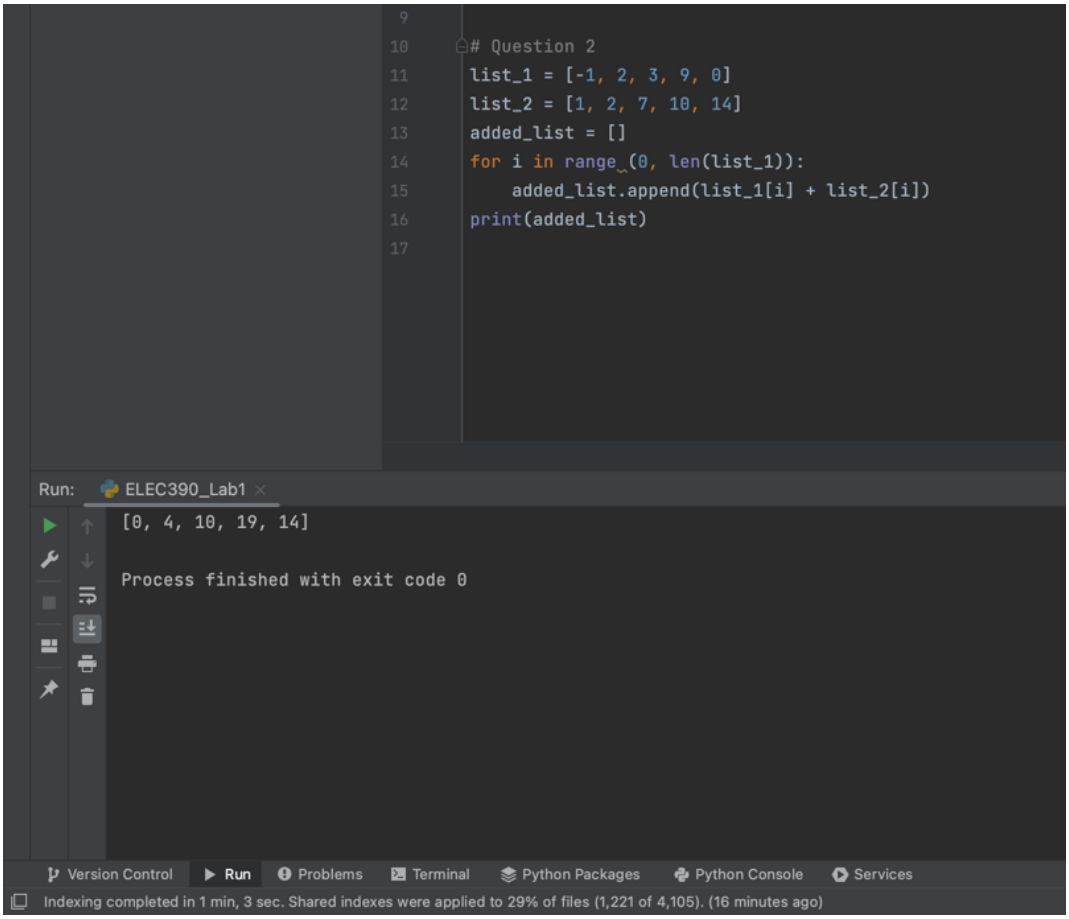

Figure 2: PyCharm code for Question 2 summing the values of two lists.

Question 3)

In Figure 3 shown below a 4D array is created with values ranging from 1 through 6. This 4D array takes the shape (2,3,2,1) which can be seen printed as the output below.

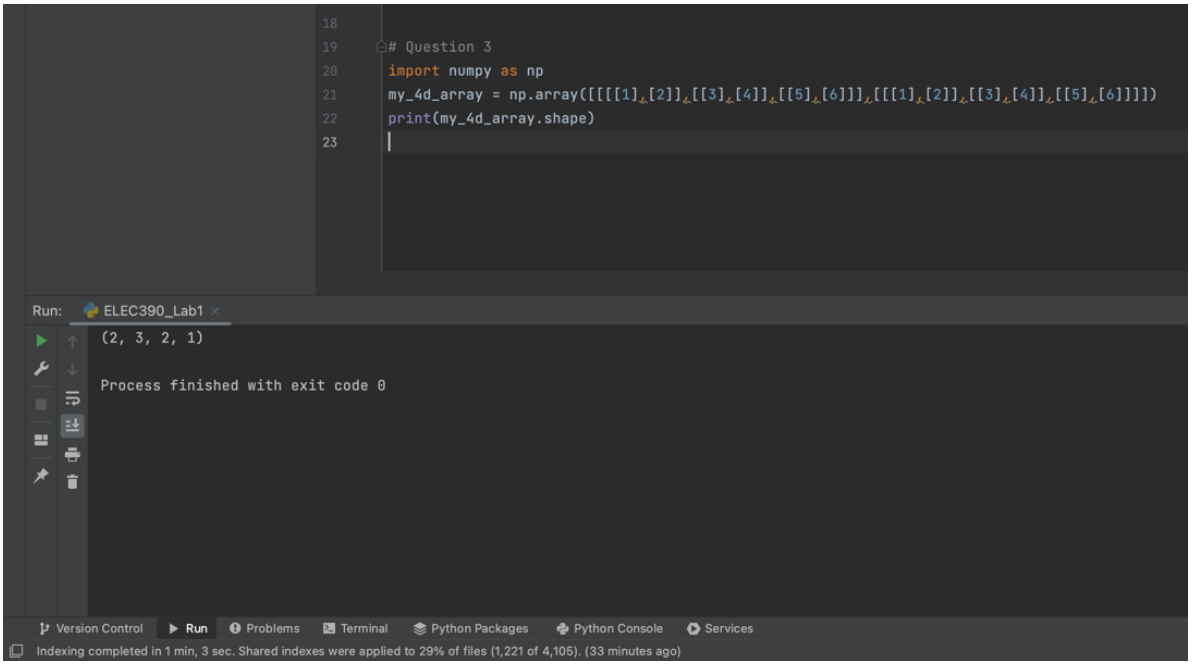

Figure 3: PyCharm code for Question 3 building a 4D array with the shape of (2,3,2,1)

Question 4)

The first step of this question was assembling a 3D array containing values 0 through 26 in a (3, 3, 3) shape. We were given three specific images in which different array elements were shaded. The goal was to print the each of the shaded elements which were specified in the image using the originally constructed array. Below in Figure 4 is the code and output for the first given Image.

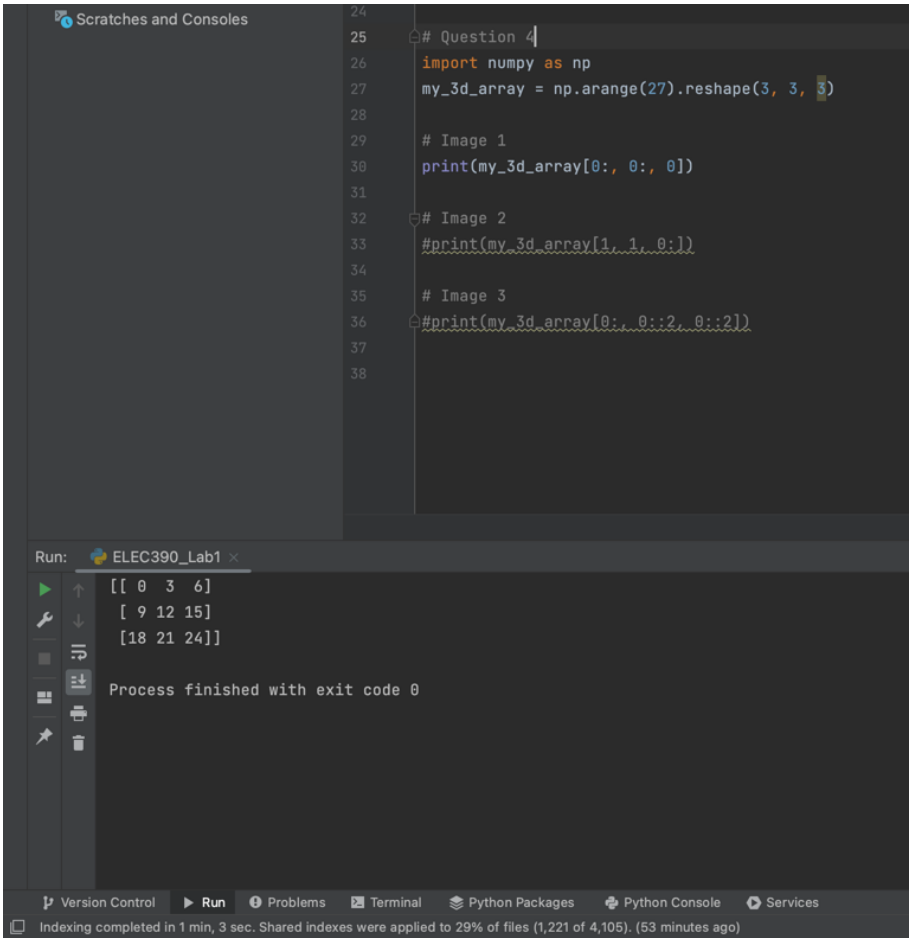

Figure 4: PyCharm code for Question 4a printing shaded values specified in the first Image.

Figure 5 is the code and output for the second Image.

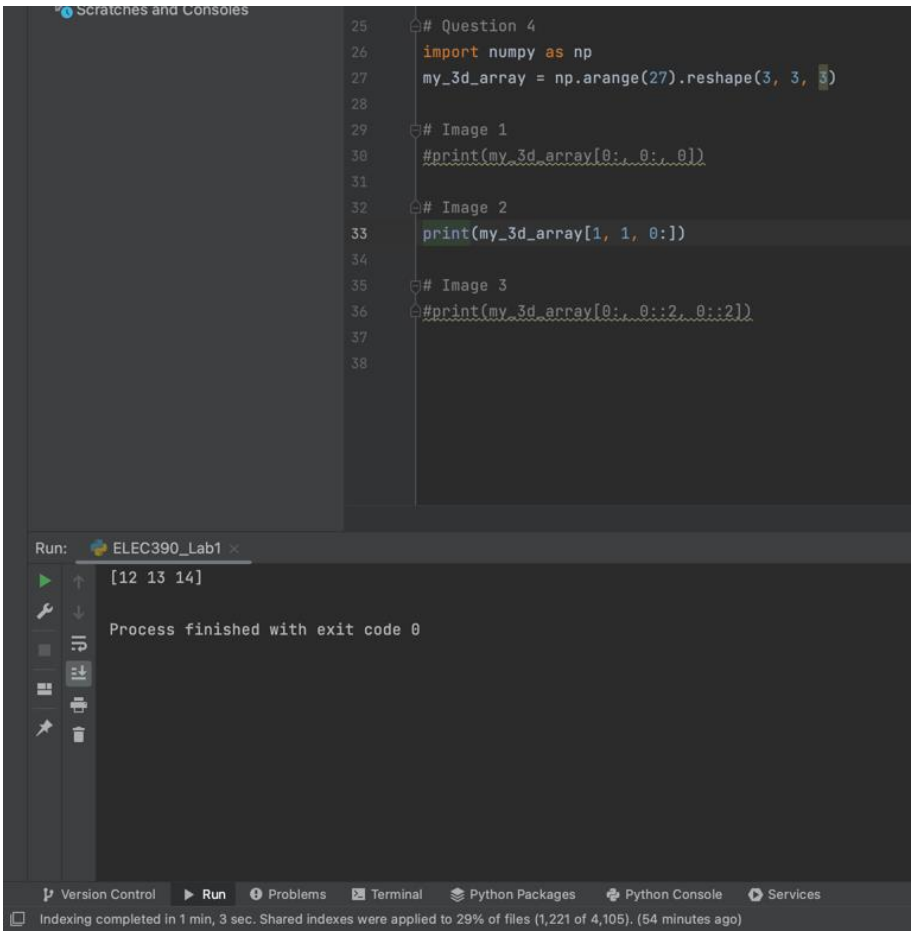

Figure 5: PyCharm code for Question 4b printing shaded values specified in the second Image.

Figure 6 is the code and output for the third Image.

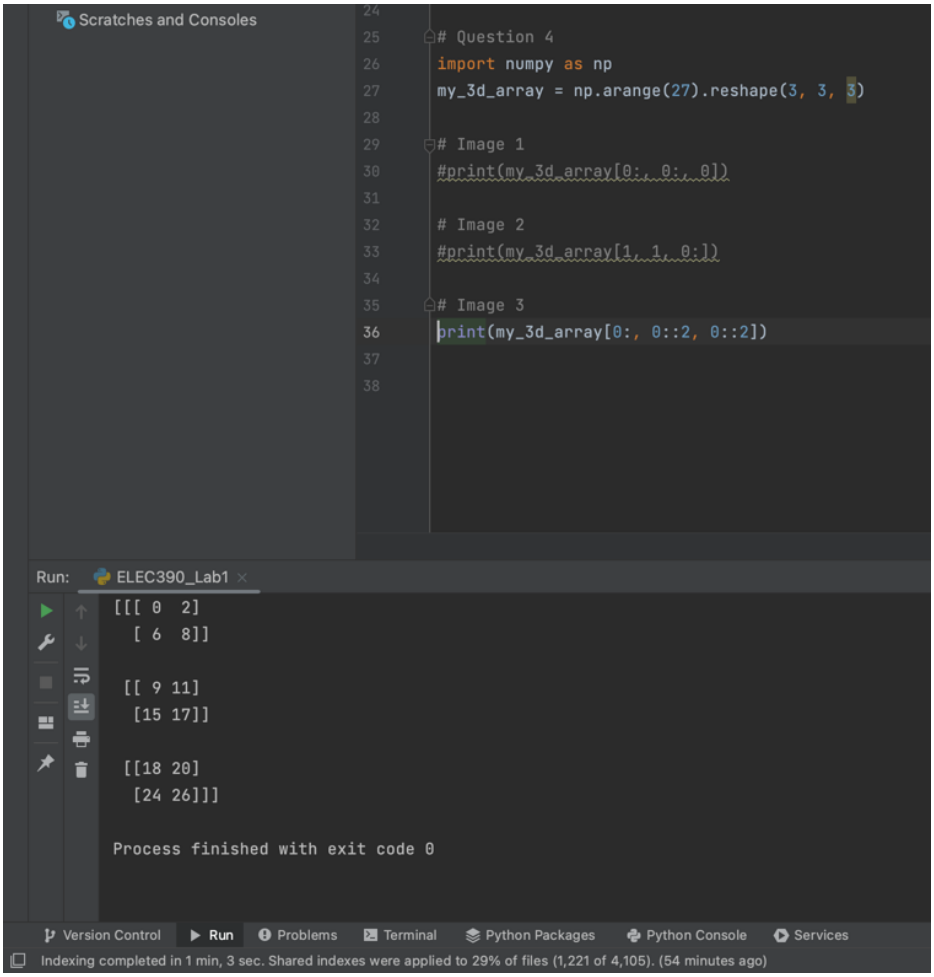

Figure 6: PyCharm code for Question 4c printing shaded values specified in the third Image.

Question 5)

This question used the same 3D array as specified in Question 4. We were given two specific images in which different array elements were shaded. The goal is the same as Question 4; to print those shaded array elements from the original 3D array. Below in Figure 7 is the code and output for the first Image.

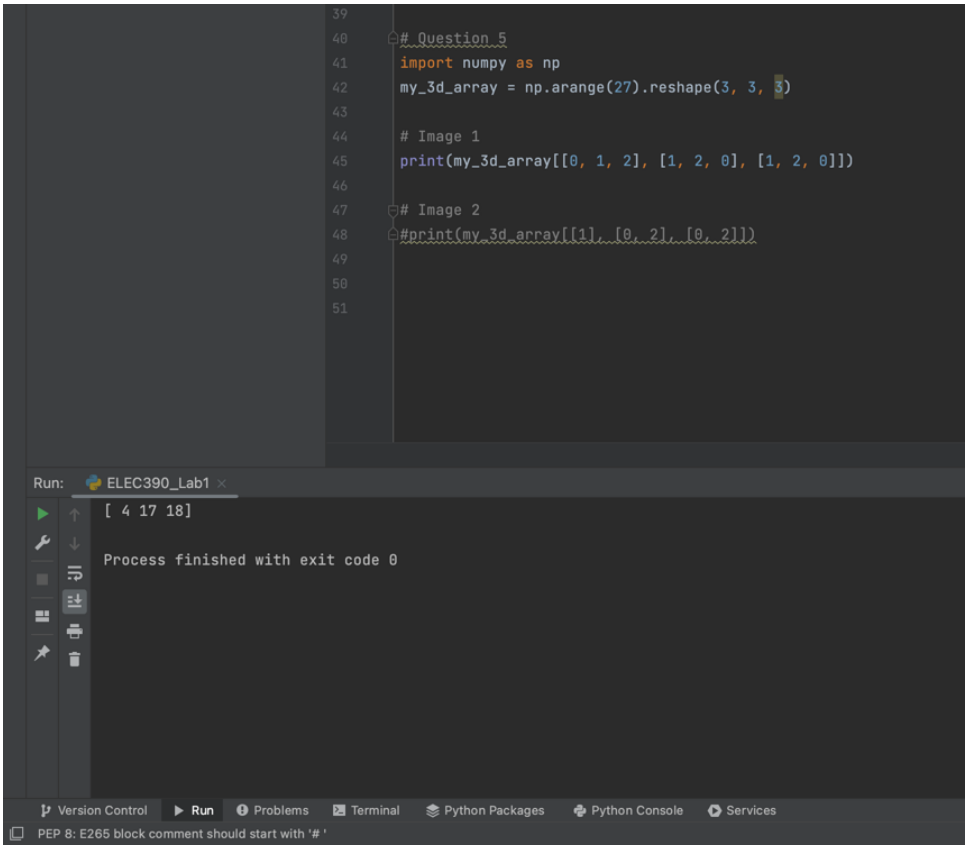

Figure 7: PyCharm code for Question 5a printing shaded values specified in the first Image.

Figure 8 is the code and output for the second Image.

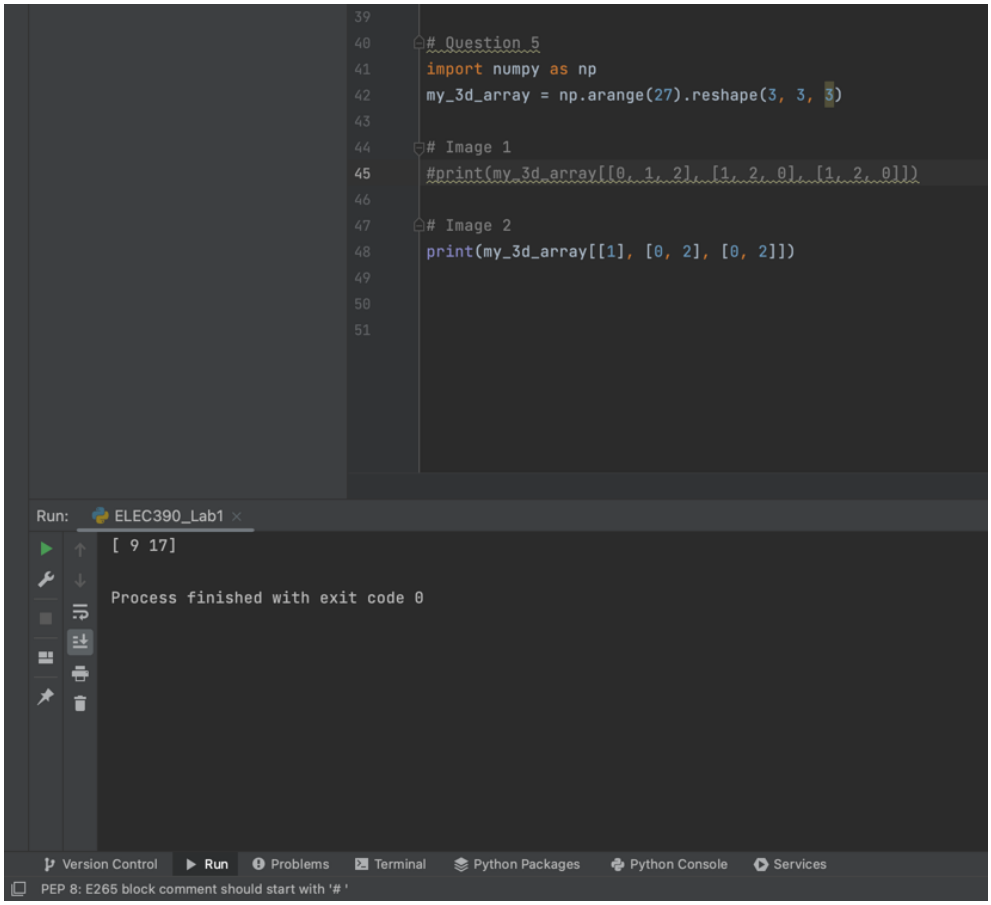

Figure 8: PyCharm code for Question 4a printing shaded values specified in the second Image.

Question 6)

This question involved creating a 2D array with values ranging -10 through 19. The following code seen in Figure 9 sums each of the columns of the array. After the sums are obtained an indexing_array is created to check if each sum is divisible by 10. If the column gets flagged as true, then it will be printed. As you can see from the output in Figure 9 each of the columns seen add up to a multiple of 10.

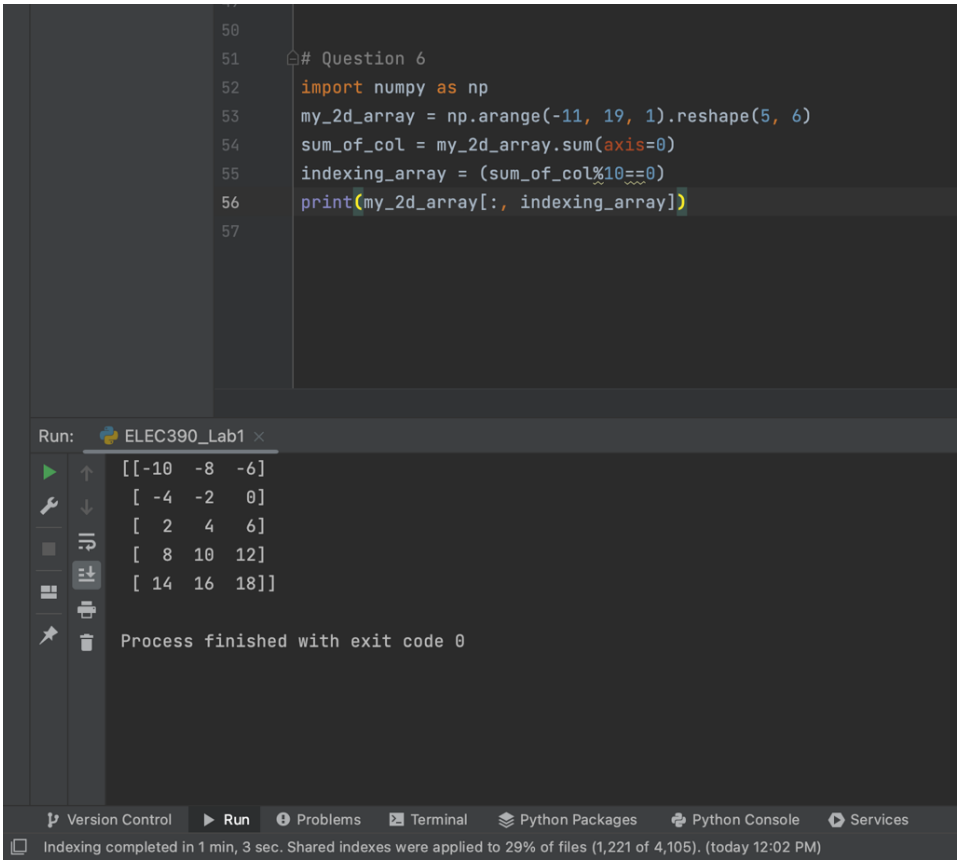

Figure 9: PyCharm code for Question 6 printing columns of a 2D array if the column values sum to a multiple of 10.