



# RNN for Human Activity Recognition - 2D Pose Input

This experiment is the classification of human activities using a 2D pose time series dataset and an LSTM RNN. The idea is to prove the concept that using a series of 2D poses, rather than 3D poses or a raw 2D images, can produce an accurate estimation of the behaviour of a person or animal. This is a step towards creating a method of classifying an animal's current behaviour state and predicting it's likely next state, allowing for better interaction with an autonomous mobile robot.

## Objectives

The aims of this experiment are:

- To determine if 2D pose has comparable accuracy to 3D pose for use in activity recognition. This would allow the use of RGB only cameras for human and animal pose estimation, as opposed to RGBD or a large motion capture dataset.
- To determine if 2D pose has comparable accuracy to using raw RGB images for use in activity recognition. This is based on the idea that limiting the input feature vector can help to deal with a limited dataset, as is likely to occur in animal activity recognition, by allowing for a smaller model to be used (citation required).
- To verify the concept for use in future works involving behaviour prediction from motion in 2D images.

The network used in this experiment is based on that of Guillaume Chevalier, 'LSTMs for Human Activity Recognition, 2016' <https://github.com/guillaume-chevalier/LSTM-Human-Activity-Recognition> (<https://github.com/guillaume-chevalier/LSTM-Human-Activity-Recognition>), available under the MIT License. Notable changes that have been made (other than accounting for dataset sizes) are:

- Adapting for use with a large dataset ordered by class, using random sampling without replacement for mini-batch.  
This allows for use of smaller batch sizes when using a dataset ordered by class. "It has been observed in practice that when using a larger batch there is a significant degradation in the quality of the model, as measured by its ability to generalize"  
*N.S Keskar, D. Mudigere, et al, 'On Large-Batch Training for Deep Learning: Generalization Gap and Sharp Minima', ICLR 2017* <https://arxiv.org/abs/1609.04836> (<https://arxiv.org/abs/1609.04836>)
- Exponentially decaying learning rate implemented

## Dataset overview

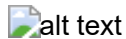
The dataset consists of pose estimations, made using the software OpenPose (<https://github.com/CMU-Perceptual-Computing-Lab/openpose>'s (<https://github.com/CMU-Perceptual-Computing-Lab/openpose>'s)) on a subset of the Berkeley Multimodal Human Action Database (MHAD) dataset [http://tele-immersion.citris-uc.org/berkeley\\_mhad](http://tele-immersion.citris-uc.org/berkeley_mhad) ([http://tele-immersion.citris-uc.org/berkeley\\_mhad](http://tele-immersion.citris-uc.org/berkeley_mhad)).

This dataset is comprised of 12 subjects doing the following 6 actions for 5 repetitions, filmed from 4 angles, repeated 5 times each.

- JUMPING,
- JUMPING\_JACKS,
- BOXING,
- WAVING\_2HANDS,
- WAVING\_1HAND,
- CLAPPING\_HANDS.

In total, there are 1438 videos (2 were missing) made up of 211200 individual frames.

The below image is an example of the 4 camera views during the 'boxing' action for subject 1



The input for the LSTM is the 2D position of 18 joints across a timeseries of frames numbering  $n\_steps$  (window-width), with an associated class label for the frame series.

A single frame's input (where  $j$  refers to a joint) is stored as:

```
[ j0_x, j0_y, j1_x, j1_y , j2_x, j2_y, j3_x, j3_y, j4_x, j4_y, j5_x, j5_y, j6_x, j6_y, j7_x, j7_y, j8_x, j8_y, j9_x, j9_y,
j10_x, j10_y, j11_x, j11_y, j12_x, j12_y, j13_x, j13_y, j14_x, j14_y, j15_x, j15_y, j16_x, j16_y, j17_x, j17_y ]
```

For the following experiment, very little preprocessing has been done to the dataset.

The following steps were taken:

1. openpose run on individual frames, for each subject, action and view, outputting JSON of 18 joint x and y position keypoints and accuracies per frame
2. JSONs converted into txt format, keeping only x and y positions of each frame, action being performed during frame, and order of frames. This is used to create a database of associated activity class number and corresponding series of joint 2D positions
3. No further preprocessing was performed.

In some cases, multiple people were detected in each frame, in which only the first detection was used.

The data has not been normalised with regards to subject position in the frame, motion across frame (if any), size of the subject, speed of action etc. It is essentially the raw 2D position of each joint viewed from a stationary camera.

In many cases, individual joints were not located and a position of [0.0,0.0] was given for that joint

A summary of the dataset used for input is:

- 211200 individual images
- $n\_steps = 32$  frames ( $\sim 1.5s$  at 22Hz)
- Images with noisy pose detection (detection of  $\geq 2$  people) = 5132
- Training\_split = 0.8
- Overlap = 0.8125 (26 / 32) ie 26 frame overlap
  - Length  $X\_train = 22625 * 32$  frames
  - Length  $X\_test = 5751 * 32$  frames

Note that there is no overlap between test and train sets, which were separated by activity repetition entirely, before creating the 26 of 32 frame overlap.

## Training and Results below:

Training took approximately 4 mins running on a single GTX1080Ti, and was run for 22,000,000ish iterations with a batch size of 5000 (600 epochs)

In [9]:

```

# useful tricks
# to suppress output of each cell; https://stackoverflow.com/questions/23692950/how-do-you-suppress-output-in-ipython-notebook

import numpy as np
import tensorflow as tf
import matplotlib # not in the environment previously
import matplotlib.pyplot as plt
#import tensorflow as tf # Version 1.0.0 (some previous versions are used in past commits)
#import tensorflow.compat.v1 as tf
#tf.disable_v2_behavior()
from sklearn import metrics # not in the environment previously
import random
from random import randint
import time
import os

import warnings
# reference - https://stackoverflow.com/questions/9031783/hide-all-warnings-in-ipython/9031848
# warnings.filterwarnings('ignore') # suppress;
warnings.filterwarnings(action='once') # display the warnings once;

# check for gpu access?
tf.Session(config=tf.ConfigProto(log_device_placement=True))
print(tf.VERSION)

```

1.13.1

## Preparing dataset:

In [3]:

```

# Useful Constants

# Output classes to learn how to classify
LABELS = [
    "JUMPING",
    "JUMPING_JACKS",
    "BOXING",
    "WAVING_2HANDS",
    "WAVING_1HAND",
    "CLAPPING_HANDS"
]
DATASET_PATH = "dataset/"

X_train_path = DATASET_PATH + "X_train.txt"
X_test_path = DATASET_PATH + "X_test.txt"

y_train_path = DATASET_PATH + "Y_train.txt"
y_test_path = DATASET_PATH + "Y_test.txt"

n_steps = 32 # 32 timesteps per series

```

In [4]:

```
# Load the networks inputs

def load_X(X_path):
    file = open(X_path, 'r')
    X_ = np.array(
        [elem for elem in [
            row.split(',') for row in file
        ]],
        dtype=np.float32
    )
    file.close()
    blocks = int(len(X_) / n_steps)

    X_ = np.array(np.split(X_, blocks))

    return X_

# Load the networks outputs

def load_y(y_path):
    file = open(y_path, 'r')
    y_ = np.array(
        [elem for elem in [
            row.replace(' ', ' ').strip().split(' ') for row in file
        ]],
        dtype=np.int32
    )
    file.close()

    # for 0-based indexing
    return y_ - 1

X_train = load_X(X_train_path)
X_test = load_X(X_test_path)
#print X_test

y_train = load_y(y_train_path)
y_test = load_y(y_test_path)
# proof that it actually works for the skeptical: replace labelled classes with random
# classes to train on
# for i in range(len(y_train)):
#     y_train[i] = randint(0, 5)
```

## Set Parameters:

In [5]:

```
# Input Data

training_data_count = len(X_train) # 4519 training series (with 50% overlap between ea
ch serie)
test_data_count = len(X_test) # 1197 test series
n_input = len(X_train[0][0]) # num input parameters per timestep

n_hidden = 34 # Hidden layer num of features
n_classes = 6

#updated for Learning-rate decay
# calculated as: decayed_learning_rate = learning_rate * decay_rate ^ (global_step / de
cay_steps)
decaying_learning_rate = True
learning_rate = 0.0025 #used if decaying_learning_rate set to False
init_learning_rate = 0.005
decay_rate = 0.96 #the base of the exponential in the decay
decay_steps = 100000 #used in decay every 60000 steps with a base of 0.96

global_step = tf.Variable(0, trainable=False)
lambda_loss_amount = 0.0015

training_iters = training_data_count * 300 # Loop 300 times on the dataset, ie 300 epoc
hs
batch_size = 512
display_iter = batch_size * 8 # To show test set accuracy during training

print("(X shape, y shape, every X's mean, every X's standard deviation)")
print(X_train.shape, y_test.shape, np.mean(X_test), np.std(X_test))
print("\nThe dataset has not been preprocessed, is not normalised etc\n")
print('hello\n')
```

WARNING:tensorflow:From C:\ProgramData\Anaconda3\envs\tf\_gpu\lib\site-pack
ages\tensorflow\python\framework\op\_def\_library.py:263: colocate\_with (fro
m tensorflow.python.framework.ops) is deprecated and will be removed in a
future version.

Instructions for updating:

Colocations handled automatically by placer.

(X shape, y shape, every X's mean, every X's standard deviation)

(22625, 32, 36) (5751, 1) 251.01117 126.12204

The dataset has not been preprocessed, is not normalised etc

hello

## Utility functions for training:

In [6]:

```
def LSTM_RNN(_X, _weights, _biases):
    # model architecture based on "guillaume-chevalier" and "aymericdamien" under the MIT license.

    _X = tf.transpose(_X, [1, 0, 2]) # permute n_steps and batch_size
    _X = tf.reshape(_X, [-1, n_input])
    # Rectifies Linear Unit activation function used
    _X = tf.nn.relu(tf.matmul(_X, _weights['hidden']) + _biases['hidden'])
    # Split data because rnn cell needs a list of inputs for the RNN inner loop
    _X = tf.split(_X, n_steps, 0)

    # Define two stacked LSTM cells (two recurrent layers deep) with tensorflow
    lstm_cell_1 = tf.contrib.rnn.BasicLSTMCell(n_hidden, forget_bias=1.0, state_is_tuple=True)
    lstm_cell_2 = tf.contrib.rnn.BasicLSTMCell(n_hidden, forget_bias=1.0, state_is_tuple=True)
    lstm_cells = tf.contrib.rnn.MultiRNNCell([lstm_cell_1, lstm_cell_2], state_is_tuple=True)
    outputs, states = tf.contrib.rnn.static_rnn(lstm_cells, _X, dtype=tf.float32)

    # A single output is produced, in style of "many to one" classifier, refer to http://karpathy.github.io/2015/05/21/rnn-effectiveness/ for details
    lstm_last_output = outputs[-1]

    # Linear activation
    return tf.matmul(lstm_last_output, _weights['out']) + _biases['out']

def extract_batch_size(_train, _labels, _unsampled, batch_size):
    # Fetch a "batch_size" amount of data and labels from "(X|y)_train" data.
    # Elements of each batch are chosen randomly, without replacement, from X_train with corresponding label from Y_train
    # unsampled_indices keeps track of sampled data ensuring non-replacement. Resets when remaining datapoints < batch_size

    shape = list(_train.shape)
    shape[0] = batch_size
    batch_s = np.empty(shape)
    batch_labels = np.empty((batch_size,1))
    for i in range(batch_size):
        # Loop index
        # index = random sample from _unsampled (indices)
        index = random.choice(_unsampled)
        batch_s[i] = _train[index]
        batch_labels[i] = _labels[index]
        # yick-modified;
        # reference - https://stackoverflow.com/questions/28150965/why-range0-10-remove-1-does-not-work
        _unsampled.remove(index) # note: '_unsampled' is of class: range; see the reference;
    _unsampled = [i for i in _unsampled if i != index]

    return batch_s, batch_labels, _unsampled

def one_hot(y_):
    # One hot encoding of the network outputs
    # e.g.: [[5], [0], [3]] --> [[0, 0, 0, 0, 0, 1], [1, 0, 0, 0, 0, 0], [0, 0, 0, 1, 0, 0]]
```

```
y_ = y_.reshape(len(y_))  
n_values = int(np.max(y_)) + 1  
return np.eye(n_values)[np.array(y_, dtype=np.int32)] # Returns FLOATS
```

## Build the network:



In [7]:

```

# Graph input/output
# warning - the attribute: "placeholder" is deprecated for tensorflow versions > 2
# https://better-coding.com/solved-attributeerror-module-tensorflow-has-no-attribute-pl
# aceholder/

x = tf.placeholder(tf.float32, [None, n_steps, n_input])
y = tf.placeholder(tf.float32, [None, n_classes])

# Graph weights
weights = {
    'hidden': tf.Variable(tf.random_normal([n_input, n_hidden])), # Hidden layer weight
    'out': tf.Variable(tf.random_normal([n_hidden, n_classes], mean=1.0))
}
biases = {
    'hidden': tf.Variable(tf.random_normal([n_hidden])),
    'out': tf.Variable(tf.random_normal([n_classes]))
}

pred = LSTM_RNN(x, weights, biases)

# Loss, optimizer and evaluation
l2 = lambda_loss_amount * sum(
    tf.nn.l2_loss(tf_var) for tf_var in tf.trainable_variables()
) # L2 loss prevents this overkill neural network to overfit the data
cost = tf.reduce_mean(tf.nn.softmax_cross_entropy_with_logits(labels=y, logits=pred)) +
l2 # Softmax loss
if decaying_learning_rate:
    learning_rate = tf.train.exponential_decay(init_learning_rate, global_step*batch_si
    ze, decay_steps, decay_rate, staircase=True)

#decayed_learning_rate = learning_rate * decay_rate ^ (global_step / decay_steps) #expo
#nentially decayed learning rate
optimizer = tf.train.AdamOptimizer(learning_rate=learning_rate).minimize(cost,global_st
    ep=global_step) # Adam Optimizer

correct_pred = tf.equal(tf.argmax(pred,1), tf.argmax(y,1))
accuracy = tf.reduce_mean(tf.cast(correct_pred, tf.float32))

```

WARNING: The TensorFlow contrib module will not be included in TensorFlow 2.0.

For more information, please see:

\* <https://github.com/tensorflow/community/blob/master/rfcs/20180907-contrib-sunset.md>

\* <https://github.com/tensorflow/addons>

If you depend on functionality not listed there, please file an issue.

WARNING:tensorflow:From <ipython-input-6-27f17d3c2292>:12: BasicLSTMCell.\_\_init\_\_ (from tensorflow.python.ops.rnn\_cell\_impl) is deprecated and will be removed in a future version.

Instructions for updating:

This class is equivalent as tf.keras.layers.LSTMCell, and will be replaced by that in Tensorflow 2.0.

WARNING:tensorflow:From <ipython-input-6-27f17d3c2292>:14: MultiRNNCell.\_\_init\_\_ (from tensorflow.python.ops.rnn\_cell\_impl) is deprecated and will be removed in a future version.

Instructions for updating:

This class is equivalent as tf.keras.layers.StackedRNNCells, and will be replaced by that in Tensorflow 2.0.

WARNING:tensorflow:From <ipython-input-6-27f17d3c2292>:15: static\_rnn (from tensorflow.python.ops.rnn) is deprecated and will be removed in a future version.

Instructions for updating:

Please use `keras.layers.RNN(cell, unroll=True)`, which is equivalent to this API

WARNING:tensorflow:From <ipython-input-7-f3a6715feeef>:24: softmax\_cross\_entropy\_with\_logits (from tensorflow.python.ops.nn\_ops) is deprecated and will be removed in a future version.

Instructions for updating:

Future major versions of TensorFlow will allow gradients to flow into the labels input on backprop by default.

See `tf.nn.softmax\_cross\_entropy\_with\_logits\_v2`.

## Train the network:

In [8]:

```

test_losses = []
test_accuracies = []
train_losses = []
train_accuracies = []
sess = tf.InteractiveSession(config=tf.ConfigProto(log_device_placement=True))
init = tf.global_variables_initializer()
sess.run(init)

# Perform Training steps with "batch_size" amount of data at each loop.
# Elements of each batch are chosen randomly, without replacement, from X_train,
# restarting when remaining datapoints < batch_size
step = 1
time_start = time.time()
unsampled_indices = range(0, len(X_train))

while step * batch_size <= training_iters:
    #print (sess.run(learning_rate)) #decaying learning rate
    #print (sess.run(global_step)) # global number of iterations
    if len(unsampled_indices) < batch_size:
        unsampled_indices = range(0, len(X_train))
    batch_xs, raw_labels, unsampled_indices = extract_batch_size(X_train, y_train, unsampled_indices, batch_size)
    batch_ys = one_hot(raw_labels)
    # check that encoded output is same length as num_classes, if not, pad it
    if len(batch_ys[0]) < n_classes:
        temp_ys = np.zeros((batch_size, n_classes))
        temp_ys[:batch_ys.shape[0], :batch_ys.shape[1]] = batch_ys
        batch_ys = temp_ys

    # Fit training using batch data
    _, loss, acc = sess.run(
        [optimizer, cost, accuracy],
        feed_dict={
            x: batch_xs,
            y: batch_ys
        }
    )
    train_losses.append(loss)
    train_accuracies.append(acc)

    # Evaluate network only at some steps for faster training:
    if (step*batch_size % display_iter == 0) or (step == 1) or (step * batch_size > training_iters):

        # To not spam console, show training accuracy/loss in this "if"
        print("Iter #" + str(step*batch_size) + \
            ": Learning rate = " + "{:.6f}".format(sess.run(learning_rate)) + \
            ": Batch Loss = " + "{:.6f}".format(loss) + \
            ", Accuracy = {}".format(acc))

    # Evaluation on the test set (no learning made here - just evaluation for diagnosis)
    loss, acc = sess.run(
        [cost, accuracy],
        feed_dict={
            x: X_test,
            y: one_hot(y_test)
        }
    )

```

```
        }
    )
    test_losses.append(loss)
    test_accuracies.append(acc)
    print("PERFORMANCE ON TEST SET: " + \
          "Batch Loss = {}".format(loss) + \
          ", Accuracy = {}".format(acc))

    step += 1

print("Optimization Finished!")

# Accuracy for test data

one_hot_predictions, accuracy, final_loss = sess.run(
    [pred, accuracy, cost],
    feed_dict={
        x: X_test,
        y: one_hot(y_test)
    }
)

test_losses.append(final_loss)
test_accuracies.append(accuracy)

print("FINAL RESULT: " + \
      "Batch Loss = {}".format(final_loss) + \
      ", Accuracy = {}".format(accuracy))
time_stop = time.time()
print("TOTAL TIME: {}".format(time_stop - time_start))
```

Iter #512: Learning rate = 0.005000: Batch Loss = 3.526922, Accuracy = 0.19921875  
PERFORMANCE ON TEST SET: Batch Loss = 3.3879947662353516, Accuracy = 0.2197878658771515  
Iter #4096: Learning rate = 0.005000: Batch Loss = 2.989375, Accuracy = 0.306640625  
PERFORMANCE ON TEST SET: Batch Loss = 2.887584686279297, Accuracy = 0.34307077527046204  
Iter #8192: Learning rate = 0.005000: Batch Loss = 2.723924, Accuracy = 0.404296875  
PERFORMANCE ON TEST SET: Batch Loss = 2.683004379272461, Accuracy = 0.4336636960506439  
Iter #12288: Learning rate = 0.005000: Batch Loss = 2.510427, Accuracy = 0.50390625  
PERFORMANCE ON TEST SET: Batch Loss = 2.4980244636535645, Accuracy = 0.5416449308395386  
Iter #16384: Learning rate = 0.005000: Batch Loss = 2.549774, Accuracy = 0.416015625  
PERFORMANCE ON TEST SET: Batch Loss = 2.5183496475219727, Accuracy = 0.45852896571159363  
Iter #20480: Learning rate = 0.005000: Batch Loss = 2.460151, Accuracy = 0.41796875  
PERFORMANCE ON TEST SET: Batch Loss = 2.3421549797058105, Accuracy = 0.5367761850357056  
Iter #24576: Learning rate = 0.005000: Batch Loss = 2.489107, Accuracy = 0.43359375  
PERFORMANCE ON TEST SET: Batch Loss = 2.3953800201416016, Accuracy = 0.49052339792251587  
Iter #28672: Learning rate = 0.005000: Batch Loss = 2.322978, Accuracy = 0.501953125  
PERFORMANCE ON TEST SET: Batch Loss = 2.2568039894104004, Accuracy = 0.5263432264328003  
Iter #32768: Learning rate = 0.005000: Batch Loss = 2.097795, Accuracy = 0.62890625  
PERFORMANCE ON TEST SET: Batch Loss = 2.1531424522399902, Accuracy = 0.5722482800483704  
Iter #36864: Learning rate = 0.005000: Batch Loss = 2.243058, Accuracy = 0.54296875  
PERFORMANCE ON TEST SET: Batch Loss = 2.0515410900115967, Accuracy = 0.6167622804641724  
Iter #40960: Learning rate = 0.005000: Batch Loss = 2.080172, Accuracy = 0.578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.9987791776657104, Accuracy = 0.6131107807159424  
Iter #45056: Learning rate = 0.005000: Batch Loss = 2.038051, Accuracy = 0.564453125  
PERFORMANCE ON TEST SET: Batch Loss = 1.9346234798431396, Accuracy = 0.6298035383224487  
Iter #49152: Learning rate = 0.005000: Batch Loss = 1.928234, Accuracy = 0.61328125  
PERFORMANCE ON TEST SET: Batch Loss = 1.9215298891067505, Accuracy = 0.656581461429596  
Iter #53248: Learning rate = 0.005000: Batch Loss = 1.875210, Accuracy = 0.697265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.859198808670044, Accuracy = 0.6784906983375549  
Iter #57344: Learning rate = 0.005000: Batch Loss = 1.904188, Accuracy = 0.626953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.876065969467163, Accuracy = 0.6548426151275635  
Iter #61440: Learning rate = 0.005000: Batch Loss = 1.718810, Accuracy

```
= 0.70703125
PERFORMANCE ON TEST SET:          Batch Loss = 1.8030116558074951, Accu
racy = 0.6701443195343018
Iter #65536: Learning rate = 0.005000: Batch Loss = 1.770049, Accuracy
= 0.67578125
PERFORMANCE ON TEST SET:          Batch Loss = 1.799513339996338, Accur
acy = 0.6857937574386597
Iter #69632: Learning rate = 0.005000: Batch Loss = 1.811988, Accuracy
= 0.669921875
PERFORMANCE ON TEST SET:          Batch Loss = 1.7900855541229248, Accu
racy = 0.687706470489502
Iter #73728: Learning rate = 0.005000: Batch Loss = 1.737167, Accuracy
= 0.724609375
PERFORMANCE ON TEST SET:          Batch Loss = 1.7375303506851196, Accu
racy = 0.6991827487945557
Iter #77824: Learning rate = 0.005000: Batch Loss = 1.726960, Accuracy
= 0.72265625
PERFORMANCE ON TEST SET:          Batch Loss = 1.7098560333251953, Accu
racy = 0.7160493731498718
Iter #81920: Learning rate = 0.005000: Batch Loss = 1.677000, Accuracy
= 0.6953125
PERFORMANCE ON TEST SET:          Batch Loss = 1.756859540939331, Accur
acy = 0.6746652722358704
Iter #86016: Learning rate = 0.005000: Batch Loss = 1.693488, Accuracy
= 0.712890625
PERFORMANCE ON TEST SET:          Batch Loss = 1.6646754741668701, Accu
racy = 0.7200486660003662
Iter #90112: Learning rate = 0.005000: Batch Loss = 1.634446, Accuracy
= 0.6796875
PERFORMANCE ON TEST SET:          Batch Loss = 1.6393654346466064, Accu
racy = 0.7101373672485352
Iter #94208: Learning rate = 0.005000: Batch Loss = 1.731565, Accuracy
= 0.66015625
PERFORMANCE ON TEST SET:          Batch Loss = 1.7006075382232666, Accu
racy = 0.6715353727340698
Iter #98304: Learning rate = 0.005000: Batch Loss = 1.557584, Accuracy
= 0.728515625
PERFORMANCE ON TEST SET:          Batch Loss = 1.7053958177566528, Accu
racy = 0.6899669766426086
Iter #102400: Learning rate = 0.004800: Batch Loss = 1.607659, Accuracy
= 0.71484375
PERFORMANCE ON TEST SET:          Batch Loss = 1.5777344703674316, Accu
racy = 0.7089201807975769
Iter #106496: Learning rate = 0.004800: Batch Loss = 1.560118, Accuracy
= 0.728515625
PERFORMANCE ON TEST SET:          Batch Loss = 1.5135005712509155, Accu
racy = 0.7440445423126221
Iter #110592: Learning rate = 0.004800: Batch Loss = 1.585845, Accuracy
= 0.72265625
PERFORMANCE ON TEST SET:          Batch Loss = 1.521201729774475, Accur
acy = 0.729264497756958
Iter #114688: Learning rate = 0.004800: Batch Loss = 1.507756, Accuracy
= 0.767578125
PERFORMANCE ON TEST SET:          Batch Loss = 1.5903515815734863, Accu
racy = 0.7125717401504517
Iter #118784: Learning rate = 0.004800: Batch Loss = 1.470733, Accuracy
= 0.736328125
PERFORMANCE ON TEST SET:          Batch Loss = 1.523011565208435, Accur
acy = 0.7348287105560303
Iter #122880: Learning rate = 0.004800: Batch Loss = 1.562328, Accuracy
= 0.705078125
```

PERFORMANCE ON TEST SET: Batch Loss = 1.5471266508102417, Accuracy = 0.7040514945983887  
Iter #126976: Learning rate = 0.004800: Batch Loss = 1.523246, Accuracy = 0.720703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.6301023960113525, Accuracy = 0.6491044759750366  
Iter #131072: Learning rate = 0.004800: Batch Loss = 1.540357, Accuracy = 0.71484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.522336483001709, Accuracy = 0.7304816842079163  
Iter #135168: Learning rate = 0.004800: Batch Loss = 1.446889, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.441519856452942, Accuracy = 0.7381324768066406  
Iter #139264: Learning rate = 0.004800: Batch Loss = 1.424098, Accuracy = 0.759765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.5513629913330078, Accuracy = 0.6974439024925232  
Iter #143360: Learning rate = 0.004800: Batch Loss = 1.500430, Accuracy = 0.740234375  
PERFORMANCE ON TEST SET: Batch Loss = 1.5047171115875244, Accuracy = 0.7115284204483032  
Iter #147456: Learning rate = 0.004800: Batch Loss = 1.575858, Accuracy = 0.69140625  
PERFORMANCE ON TEST SET: Batch Loss = 1.583299160003662, Accuracy = 0.6960528492927551  
Iter #151552: Learning rate = 0.004800: Batch Loss = 1.429147, Accuracy = 0.744140625  
PERFORMANCE ON TEST SET: Batch Loss = 1.4860950708389282, Accuracy = 0.7221353054046631  
Iter #155648: Learning rate = 0.004800: Batch Loss = 1.395472, Accuracy = 0.763671875  
PERFORMANCE ON TEST SET: Batch Loss = 1.585444450378418, Accuracy = 0.6967483758926392  
Iter #159744: Learning rate = 0.004800: Batch Loss = 1.472334, Accuracy = 0.70703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.4661788940429688, Accuracy = 0.7209181189537048  
Iter #163840: Learning rate = 0.004800: Batch Loss = 1.390318, Accuracy = 0.748046875  
PERFORMANCE ON TEST SET: Batch Loss = 1.4382503032684326, Accuracy = 0.7541297078132629  
Iter #167936: Learning rate = 0.004800: Batch Loss = 1.347453, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.4505935907363892, Accuracy = 0.7350026369094849  
Iter #172032: Learning rate = 0.004800: Batch Loss = 1.433962, Accuracy = 0.7421875  
PERFORMANCE ON TEST SET: Batch Loss = 1.3975821733474731, Accuracy = 0.7607372403144836  
Iter #176128: Learning rate = 0.004800: Batch Loss = 1.327404, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.3577251434326172, Accuracy = 0.7753434181213379  
Iter #180224: Learning rate = 0.004800: Batch Loss = 1.293792, Accuracy = 0.79296875  
PERFORMANCE ON TEST SET: Batch Loss = 1.3613824844360352, Accuracy = 0.7537819743156433  
Iter #184320: Learning rate = 0.004800: Batch Loss = 1.360129, Accuracy = 0.740234375  
PERFORMANCE ON TEST SET: Batch Loss = 1.3577256202697754, Accuracy = 0.740234375

```
racy = 0.7576074004173279
Iter #188416: Learning rate = 0.004800: Batch Loss = 1.267964, Accuracy
= 0.806640625
PERFORMANCE ON TEST SET: Batch Loss = 1.470594882965088, Accur
acy = 0.729960024356842
Iter #192512: Learning rate = 0.004800: Batch Loss = 1.310650, Accuracy
= 0.77734375
PERFORMANCE ON TEST SET: Batch Loss = 1.3367326259613037, Accu
racy = 0.7657798528671265
Iter #196608: Learning rate = 0.004800: Batch Loss = 1.281442, Accuracy
= 0.775390625
PERFORMANCE ON TEST SET: Batch Loss = 1.3170535564422607, Accu
racy = 0.7703008055686951
Iter #200704: Learning rate = 0.004608: Batch Loss = 1.330364, Accuracy
= 0.775390625
PERFORMANCE ON TEST SET: Batch Loss = 1.3164691925048828, Accu
racy = 0.7715179920196533
Iter #204800: Learning rate = 0.004608: Batch Loss = 1.259244, Accuracy
= 0.818359375
PERFORMANCE ON TEST SET: Batch Loss = 3.7963056564331055, Accu
racy = 0.4708746373653412
Iter #208896: Learning rate = 0.004608: Batch Loss = 2.019292, Accuracy
= 0.4453125
PERFORMANCE ON TEST SET: Batch Loss = 2.0307509899139404, Accu
racy = 0.46078944206237793
Iter #212992: Learning rate = 0.004608: Batch Loss = 1.955724, Accuracy
= 0.48046875
PERFORMANCE ON TEST SET: Batch Loss = 2.1418728828430176, Accu
racy = 0.47174403071403503
Iter #217088: Learning rate = 0.004608: Batch Loss = 1.904222, Accuracy
= 0.50390625
PERFORMANCE ON TEST SET: Batch Loss = 1.8586593866348267, Accu
racy = 0.543383777141571
Iter #221184: Learning rate = 0.004608: Batch Loss = 1.920824, Accuracy
= 0.51953125
PERFORMANCE ON TEST SET: Batch Loss = 1.7989052534103394, Accu
racy = 0.5929403305053711
Iter #225280: Learning rate = 0.004608: Batch Loss = 1.734341, Accuracy
= 0.587890625
PERFORMANCE ON TEST SET: Batch Loss = 1.796802282333374, Accur
acy = 0.559728741645813
Iter #229376: Learning rate = 0.004608: Batch Loss = 1.755063, Accuracy
= 0.572265625
PERFORMANCE ON TEST SET: Batch Loss = 1.7490395307540894, Accu
racy = 0.5927664637565613
Iter #233472: Learning rate = 0.004608: Batch Loss = 3.869408, Accuracy
= 0.29296875
PERFORMANCE ON TEST SET: Batch Loss = 3.153437852859497, Accur
acy = 0.32116153836250305
Iter #237568: Learning rate = 0.004608: Batch Loss = 2.379040, Accuracy
= 0.2421875
PERFORMANCE ON TEST SET: Batch Loss = 2.321929454803467, Accur
acy = 0.24726134538650513
Iter #241664: Learning rate = 0.004608: Batch Loss = 2.282774, Accuracy
= 0.39453125
PERFORMANCE ON TEST SET: Batch Loss = 2.2064456939697266, Accu
racy = 0.44983482360839844
Iter #245760: Learning rate = 0.004608: Batch Loss = 2.255287, Accuracy
= 0.35546875
PERFORMANCE ON TEST SET: Batch Loss = 2.136434316635132, Accur
acy = 0.46826639771461487
```



Iter #249856: Learning rate = 0.004608: Batch Loss = 2.155848, Accuracy = 0.40234375  
PERFORMANCE ON TEST SET: Batch Loss = 2.0976715087890625, Accuracy = 0.4315771162509918  
Iter #253952: Learning rate = 0.004608: Batch Loss = 2.139487, Accuracy = 0.41796875  
PERFORMANCE ON TEST SET: Batch Loss = 2.003925085067749, Accuracy = 0.48495912551879883  
Iter #258048: Learning rate = 0.004608: Batch Loss = 2.119453, Accuracy = 0.419921875  
PERFORMANCE ON TEST SET: Batch Loss = 1.9923155307769775, Accuracy = 0.4891323149204254  
Iter #262144: Learning rate = 0.004608: Batch Loss = 2.173018, Accuracy = 0.416015625  
PERFORMANCE ON TEST SET: Batch Loss = 2.0595149993896484, Accuracy = 0.45244306325912476  
Iter #266240: Learning rate = 0.004608: Batch Loss = 2.131440, Accuracy = 0.447265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.9113222360610962, Accuracy = 0.5425143241882324  
Iter #270336: Learning rate = 0.004608: Batch Loss = 1.990546, Accuracy = 0.501953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.829270839691162, Accuracy = 0.5656407475471497  
Iter #274432: Learning rate = 0.004608: Batch Loss = 1.888039, Accuracy = 0.494140625  
PERFORMANCE ON TEST SET: Batch Loss = 1.883558988571167, Accuracy = 0.5647713541984558  
Iter #278528: Learning rate = 0.004608: Batch Loss = 1.793662, Accuracy = 0.6171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.7735941410064697, Accuracy = 0.5818118453025818  
Iter #282624: Learning rate = 0.004608: Batch Loss = 1.772268, Accuracy = 0.59765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.7108302116394043, Accuracy = 0.6077203750610352  
Iter #286720: Learning rate = 0.004608: Batch Loss = 2.221627, Accuracy = 0.466796875  
PERFORMANCE ON TEST SET: Batch Loss = 2.105194091796875, Accuracy = 0.4061902165412903  
Iter #290816: Learning rate = 0.004608: Batch Loss = 1.851532, Accuracy = 0.51953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.7904338836669922, Accuracy = 0.5663362741470337  
Iter #294912: Learning rate = 0.004608: Batch Loss = 1.727595, Accuracy = 0.61328125  
PERFORMANCE ON TEST SET: Batch Loss = 1.684667944908142, Accuracy = 0.6271952986717224  
Iter #299008: Learning rate = 0.004608: Batch Loss = 1.706117, Accuracy = 0.587890625  
PERFORMANCE ON TEST SET: Batch Loss = 1.6852096319198608, Accuracy = 0.6318901181221008  
Iter #303104: Learning rate = 0.004424: Batch Loss = 1.621914, Accuracy = 0.68359375  
PERFORMANCE ON TEST SET: Batch Loss = 1.6107242107391357, Accuracy = 0.6567553281784058  
Iter #307200: Learning rate = 0.004424: Batch Loss = 1.713464, Accuracy = 0.591796875  
PERFORMANCE ON TEST SET: Batch Loss = 1.6684670448303223, Accuracy = 0.6504955887794495  
Iter #311296: Learning rate = 0.004424: Batch Loss = 1.881243, Accuracy =

```
= 0.5859375
PERFORMANCE ON TEST SET:          Batch Loss = 1.8611650466918945, Accu
racy = 0.5772908926010132
Iter #315392: Learning rate = 0.004424: Batch Loss = 1.693546, Accuracy
= 0.658203125
PERFORMANCE ON TEST SET:          Batch Loss = 1.7866342067718506, Accu
racy = 0.6016345024108887
Iter #319488: Learning rate = 0.004424: Batch Loss = 1.677834, Accuracy
= 0.630859375
PERFORMANCE ON TEST SET:          Batch Loss = 1.7205705642700195, Accu
racy = 0.6285863518714905
Iter #323584: Learning rate = 0.004424: Batch Loss = 1.656010, Accuracy
= 0.634765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.9219515323638916, Accu
racy = 0.5574682950973511
Iter #327680: Learning rate = 0.004424: Batch Loss = 1.652952, Accuracy
= 0.65234375
PERFORMANCE ON TEST SET:          Batch Loss = 1.823986530303955, Accur
acy = 0.5927664637565613
Iter #331776: Learning rate = 0.004424: Batch Loss = 1.947315, Accuracy
= 0.556640625
PERFORMANCE ON TEST SET:          Batch Loss = 1.823476791381836, Accur
acy = 0.5884193778038025
Iter #335872: Learning rate = 0.004424: Batch Loss = 1.852860, Accuracy
= 0.560546875
PERFORMANCE ON TEST SET:          Batch Loss = 1.8468177318572998, Accu
racy = 0.5633803009986877
Iter #339968: Learning rate = 0.004424: Batch Loss = 1.703680, Accuracy
= 0.6171875
PERFORMANCE ON TEST SET:          Batch Loss = 1.673468828201294, Accur
acy = 0.6320639848709106
Iter #344064: Learning rate = 0.004424: Batch Loss = 1.672543, Accuracy
= 0.63671875
PERFORMANCE ON TEST SET:          Batch Loss = 1.5810329914093018, Accu
racy = 0.6765779852867126
Iter #348160: Learning rate = 0.004424: Batch Loss = 1.579378, Accuracy
= 0.646484375
PERFORMANCE ON TEST SET:          Batch Loss = 1.6629912853240967, Accu
racy = 0.6270213723182678
Iter #352256: Learning rate = 0.004424: Batch Loss = 1.662466, Accuracy
= 0.6484375
PERFORMANCE ON TEST SET:          Batch Loss = 1.5697264671325684, Accu
racy = 0.6830116510391235
Iter #356352: Learning rate = 0.004424: Batch Loss = 1.786973, Accuracy
= 0.576171875
PERFORMANCE ON TEST SET:          Batch Loss = 1.839998483657837, Accur
acy = 0.5917232036590576
Iter #360448: Learning rate = 0.004424: Batch Loss = 1.630975, Accuracy
= 0.646484375
PERFORMANCE ON TEST SET:          Batch Loss = 1.6236395835876465, Accu
racy = 0.6717092394828796
Iter #364544: Learning rate = 0.004424: Batch Loss = 1.553076, Accuracy
= 0.689453125
PERFORMANCE ON TEST SET:          Batch Loss = 1.5695945024490356, Accu
racy = 0.6746652722358704
Iter #368640: Learning rate = 0.004424: Batch Loss = 1.603054, Accuracy
= 0.650390625
PERFORMANCE ON TEST SET:          Batch Loss = 1.5194129943847656, Accu
racy = 0.6944879293441772
Iter #372736: Learning rate = 0.004424: Batch Loss = 1.530496, Accuracy
= 0.66796875
```

PERFORMANCE ON TEST SET: Batch Loss = 1.5258464813232422, Accuracy = 0.6685793995857239  
Iter #376832: Learning rate = 0.004424: Batch Loss = 1.462585, Accuracy = 0.71875  
PERFORMANCE ON TEST SET: Batch Loss = 1.495157241821289, Accuracy = 0.6957051157951355  
Iter #380928: Learning rate = 0.004424: Batch Loss = 1.481490, Accuracy = 0.70703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.5324163436889648, Accuracy = 0.6922274231910706  
Iter #385024: Learning rate = 0.004424: Batch Loss = 1.472206, Accuracy = 0.703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.4896340370178223, Accuracy = 0.7061380743980408  
Iter #389120: Learning rate = 0.004424: Batch Loss = 1.440611, Accuracy = 0.71484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.5143241882324219, Accuracy = 0.7009215950965881  
Iter #393216: Learning rate = 0.004424: Batch Loss = 1.532011, Accuracy = 0.681640625  
PERFORMANCE ON TEST SET: Batch Loss = 1.5086994171142578, Accuracy = 0.6917057633399963  
Iter #397312: Learning rate = 0.004424: Batch Loss = 1.515518, Accuracy = 0.669921875  
PERFORMANCE ON TEST SET: Batch Loss = 1.4850101470947266, Accuracy = 0.6668405532836914  
Iter #401408: Learning rate = 0.004247: Batch Loss = 1.459402, Accuracy = 0.71484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.5351545810699463, Accuracy = 0.6802295446395874  
Iter #405504: Learning rate = 0.004247: Batch Loss = 1.425560, Accuracy = 0.701171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.5030686855316162, Accuracy = 0.6887497901916504  
Iter #409600: Learning rate = 0.004247: Batch Loss = 1.443297, Accuracy = 0.705078125  
PERFORMANCE ON TEST SET: Batch Loss = 1.4956059455871582, Accuracy = 0.6995305418968201  
Iter #413696: Learning rate = 0.004247: Batch Loss = 1.400302, Accuracy = 0.720703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.4450464248657227, Accuracy = 0.7111806869506836  
Iter #417792: Learning rate = 0.004247: Batch Loss = 1.434812, Accuracy = 0.701171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.464860439300537, Accuracy = 0.6967483758926392  
Iter #421888: Learning rate = 0.004247: Batch Loss = 1.415498, Accuracy = 0.68359375  
PERFORMANCE ON TEST SET: Batch Loss = 1.4545025825500488, Accuracy = 0.6652756333351135  
Iter #425984: Learning rate = 0.004247: Batch Loss = 1.582944, Accuracy = 0.677734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.4459567070007324, Accuracy = 0.7064858078956604  
Iter #430080: Learning rate = 0.004247: Batch Loss = 1.443554, Accuracy = 0.708984375  
PERFORMANCE ON TEST SET: Batch Loss = 1.446462869644165, Accuracy = 0.7005738019943237  
Iter #434176: Learning rate = 0.004247: Batch Loss = 1.432167, Accuracy = 0.708984375  
PERFORMANCE ON TEST SET: Batch Loss = 1.4599529504776, Accuracy = 0.708984375

```
y = 0.7002260684967041
Iter #438272: Learning rate = 0.004247: Batch Loss = 1.388052, Accuracy
= 0.72265625
PERFORMANCE ON TEST SET: Batch Loss = 1.4717826843261719, Accu
racy = 0.6647539734840393
Iter #442368: Learning rate = 0.004247: Batch Loss = 1.458447, Accuracy
= 0.6875
PERFORMANCE ON TEST SET: Batch Loss = 1.419065237045288, Accur
acy = 0.7136150002479553
Iter #446464: Learning rate = 0.004247: Batch Loss = 1.434400, Accuracy
= 0.69921875
PERFORMANCE ON TEST SET: Batch Loss = 1.470787525177002, Accur
acy = 0.6934446096420288
Iter #450560: Learning rate = 0.004247: Batch Loss = 1.398946, Accuracy
= 0.71875
PERFORMANCE ON TEST SET: Batch Loss = 1.4877262115478516, Accu
racy = 0.6911841630935669
Iter #454656: Learning rate = 0.004247: Batch Loss = 1.398216, Accuracy
= 0.708984375
PERFORMANCE ON TEST SET: Batch Loss = 1.4392534494400024, Accu
racy = 0.6715353727340698
Iter #458752: Learning rate = 0.004247: Batch Loss = 1.390986, Accuracy
= 0.734375
PERFORMANCE ON TEST SET: Batch Loss = 1.3963892459869385, Accu
racy = 0.7179620862007141
Iter #462848: Learning rate = 0.004247: Batch Loss = 1.409698, Accuracy
= 0.703125
PERFORMANCE ON TEST SET: Batch Loss = 1.4048569202423096, Accu
racy = 0.7120500802993774
Iter #466944: Learning rate = 0.004247: Batch Loss = 1.376956, Accuracy
= 0.7109375
PERFORMANCE ON TEST SET: Batch Loss = 1.383014440536499, Accur
acy = 0.7203964591026306
Iter #471040: Learning rate = 0.004247: Batch Loss = 1.359890, Accuracy
= 0.72265625
PERFORMANCE ON TEST SET: Batch Loss = 1.398223876953125, Accur
acy = 0.7123978734016418
Iter #475136: Learning rate = 0.004247: Batch Loss = 1.413579, Accuracy
= 0.70703125
PERFORMANCE ON TEST SET: Batch Loss = 1.4773385524749756, Accu
racy = 0.6833594441413879
Iter #479232: Learning rate = 0.004247: Batch Loss = 1.390810, Accuracy
= 0.716796875
PERFORMANCE ON TEST SET: Batch Loss = 1.4385709762573242, Accu
racy = 0.6772735118865967
Iter #483328: Learning rate = 0.004247: Batch Loss = 1.420403, Accuracy
= 0.693359375
PERFORMANCE ON TEST SET: Batch Loss = 1.4782801866531372, Accu
racy = 0.6837071776390076
Iter #487424: Learning rate = 0.004247: Batch Loss = 1.360901, Accuracy
= 0.732421875
PERFORMANCE ON TEST SET: Batch Loss = 1.4577922821044922, Accu
racy = 0.693270742893219
Iter #491520: Learning rate = 0.004247: Batch Loss = 1.328735, Accuracy
= 0.724609375
PERFORMANCE ON TEST SET: Batch Loss = 1.3893849849700928, Accu
racy = 0.6817944645881653
Iter #495616: Learning rate = 0.004247: Batch Loss = 1.375420, Accuracy
= 0.73046875
PERFORMANCE ON TEST SET: Batch Loss = 1.4012583494186401, Accu
racy = 0.7077029943466187
```

Iter #499712: Learning rate = 0.004247: Batch Loss = 1.378875, Accuracy = 0.705078125  
PERFORMANCE ON TEST SET: Batch Loss = 1.3844287395477295, Accuracy = 0.6826638579368591  
Iter #503808: Learning rate = 0.004077: Batch Loss = 1.349273, Accuracy = 0.728515625  
PERFORMANCE ON TEST SET: Batch Loss = 1.3844952583312988, Accuracy = 0.7153538465499878  
Iter #507904: Learning rate = 0.004077: Batch Loss = 1.435394, Accuracy = 0.669921875  
PERFORMANCE ON TEST SET: Batch Loss = 1.380551815032959, Accuracy = 0.6991827487945557  
Iter #512000: Learning rate = 0.004077: Batch Loss = 1.457085, Accuracy = 0.703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.464167594909668, Accuracy = 0.6977916955947876  
Iter #516096: Learning rate = 0.004077: Batch Loss = 1.423877, Accuracy = 0.65234375  
PERFORMANCE ON TEST SET: Batch Loss = 1.392505168914795, Accuracy = 0.6937924027442932  
Iter #520192: Learning rate = 0.004077: Batch Loss = 1.307522, Accuracy = 0.74609375  
PERFORMANCE ON TEST SET: Batch Loss = 1.427612066268921, Accuracy = 0.6979655623435974  
Iter #524288: Learning rate = 0.004077: Batch Loss = 1.356624, Accuracy = 0.697265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.3945956230163574, Accuracy = 0.6849243640899658  
Iter #528384: Learning rate = 0.004077: Batch Loss = 1.320691, Accuracy = 0.763671875  
PERFORMANCE ON TEST SET: Batch Loss = 1.3659039735794067, Accuracy = 0.7170926928520203  
Iter #532480: Learning rate = 0.004077: Batch Loss = 1.316393, Accuracy = 0.734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.3693712949752808, Accuracy = 0.7226569056510925  
Iter #536576: Learning rate = 0.004077: Batch Loss = 1.436801, Accuracy = 0.6953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.4503333568572998, Accuracy = 0.6983133554458618  
Iter #540672: Learning rate = 0.004077: Batch Loss = 1.332697, Accuracy = 0.73046875  
PERFORMANCE ON TEST SET: Batch Loss = 1.4088377952575684, Accuracy = 0.6958789825439453  
Iter #544768: Learning rate = 0.004077: Batch Loss = 1.412349, Accuracy = 0.708984375  
PERFORMANCE ON TEST SET: Batch Loss = 1.380516529083252, Accuracy = 0.6868370771408081  
Iter #548864: Learning rate = 0.004077: Batch Loss = 1.349446, Accuracy = 0.720703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.3966479301452637, Accuracy = 0.7080507874488831  
Iter #552960: Learning rate = 0.004077: Batch Loss = 1.353929, Accuracy = 0.71875  
PERFORMANCE ON TEST SET: Batch Loss = 1.3982501029968262, Accuracy = 0.7170926928520203  
Iter #557056: Learning rate = 0.004077: Batch Loss = 1.296345, Accuracy = 0.7265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.3934152126312256, Accuracy = 0.7087463140487671  
Iter #561152: Learning rate = 0.004077: Batch Loss = 1.299976, Accuracy =

= 0.7421875

PERFORMANCE ON TEST SET: Batch Loss = 1.4318385124206543, Accuracy = 0.7038775682449341

Iter #565248: Learning rate = 0.004077: Batch Loss = 1.284779, Accuracy = 0.7265625

PERFORMANCE ON TEST SET: Batch Loss = 1.332770586013794, Accuracy = 0.7304816842079163

Iter #569344: Learning rate = 0.004077: Batch Loss = 1.394720, Accuracy = 0.7265625

PERFORMANCE ON TEST SET: Batch Loss = 1.5680975914001465, Accuracy = 0.6704921126365662

Iter #573440: Learning rate = 0.004077: Batch Loss = 1.466452, Accuracy = 0.6875

PERFORMANCE ON TEST SET: Batch Loss = 1.5358493328094482, Accuracy = 0.6670144200325012

Iter #577536: Learning rate = 0.004077: Batch Loss = 1.450177, Accuracy = 0.6484375

PERFORMANCE ON TEST SET: Batch Loss = 1.4972156286239624, Accuracy = 0.6704921126365662

Iter #581632: Learning rate = 0.004077: Batch Loss = 1.253864, Accuracy = 0.771484375

PERFORMANCE ON TEST SET: Batch Loss = 1.362046480178833, Accuracy = 0.7249174118041992

Iter #585728: Learning rate = 0.004077: Batch Loss = 1.362138, Accuracy = 0.693359375

PERFORMANCE ON TEST SET: Batch Loss = 1.3650541305541992, Accuracy = 0.7181359529495239

Iter #589824: Learning rate = 0.004077: Batch Loss = 1.384626, Accuracy = 0.7109375

PERFORMANCE ON TEST SET: Batch Loss = 1.3897018432617188, Accuracy = 0.7118762135505676

Iter #593920: Learning rate = 0.004077: Batch Loss = 1.358538, Accuracy = 0.724609375

PERFORMANCE ON TEST SET: Batch Loss = 1.340620517730713, Accuracy = 0.7212658524513245

Iter #598016: Learning rate = 0.004077: Batch Loss = 1.345024, Accuracy = 0.703125

PERFORMANCE ON TEST SET: Batch Loss = 1.3655686378479004, Accuracy = 0.7191792726516724

Iter #602112: Learning rate = 0.003914: Batch Loss = 1.402919, Accuracy = 0.6875

PERFORMANCE ON TEST SET: Batch Loss = 1.3637285232543945, Accuracy = 0.7176143527030945

Iter #606208: Learning rate = 0.003914: Batch Loss = 1.312696, Accuracy = 0.71875

PERFORMANCE ON TEST SET: Batch Loss = 1.3374688625335693, Accuracy = 0.6915318965911865

Iter #610304: Learning rate = 0.003914: Batch Loss = 1.265388, Accuracy = 0.736328125

PERFORMANCE ON TEST SET: Batch Loss = 1.3566665649414062, Accuracy = 0.7104851603507996

Iter #614400: Learning rate = 0.003914: Batch Loss = 1.298002, Accuracy = 0.728515625

PERFORMANCE ON TEST SET: Batch Loss = 1.4592437744140625, Accuracy = 0.6477134227752686

Iter #618496: Learning rate = 0.003914: Batch Loss = 1.332345, Accuracy = 0.70703125

PERFORMANCE ON TEST SET: Batch Loss = 1.3181686401367188, Accuracy = 0.7205703258514404

Iter #622592: Learning rate = 0.003914: Batch Loss = 1.273949, Accuracy = 0.7265625

PERFORMANCE ON TEST SET: Batch Loss = 1.302191972732544, Accuracy = 0.7040514945983887  
Iter #626688: Learning rate = 0.003914: Batch Loss = 1.324779, Accuracy = 0.724609375  
PERFORMANCE ON TEST SET: Batch Loss = 1.3071955442428589, Accuracy = 0.729960024356842  
Iter #630784: Learning rate = 0.003914: Batch Loss = 1.224145, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.3471111059188843, Accuracy = 0.7172665596008301  
Iter #634880: Learning rate = 0.003914: Batch Loss = 1.368150, Accuracy = 0.697265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.3166320323944092, Accuracy = 0.7344809770584106  
Iter #638976: Learning rate = 0.003914: Batch Loss = 1.323623, Accuracy = 0.72265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.3219902515411377, Accuracy = 0.6936184763908386  
Iter #643072: Learning rate = 0.003914: Batch Loss = 1.290074, Accuracy = 0.73828125  
PERFORMANCE ON TEST SET: Batch Loss = 1.3166389465332031, Accuracy = 0.7270039916038513  
Iter #647168: Learning rate = 0.003914: Batch Loss = 1.228023, Accuracy = 0.744140625  
PERFORMANCE ON TEST SET: Batch Loss = 1.3115233182907104, Accuracy = 0.7257868051528931  
Iter #651264: Learning rate = 0.003914: Batch Loss = 1.287390, Accuracy = 0.72265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2797305583953857, Accuracy = 0.7369152903556824  
Iter #655360: Learning rate = 0.003914: Batch Loss = 1.320428, Accuracy = 0.73046875  
PERFORMANCE ON TEST SET: Batch Loss = 1.408632755279541, Accuracy = 0.6776213049888611  
Iter #659456: Learning rate = 0.003914: Batch Loss = 1.254339, Accuracy = 0.74609375  
PERFORMANCE ON TEST SET: Batch Loss = 1.3078505992889404, Accuracy = 0.7224830389022827  
Iter #663552: Learning rate = 0.003914: Batch Loss = 1.315511, Accuracy = 0.70703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.3604899644851685, Accuracy = 0.7042253613471985  
Iter #667648: Learning rate = 0.003914: Batch Loss = 1.232205, Accuracy = 0.73828125  
PERFORMANCE ON TEST SET: Batch Loss = 1.351938247680664, Accuracy = 0.7122239470481873  
Iter #671744: Learning rate = 0.003914: Batch Loss = 1.297621, Accuracy = 0.701171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.332885980606079, Accuracy = 0.7296122312545776  
Iter #675840: Learning rate = 0.003914: Batch Loss = 1.362138, Accuracy = 0.6953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.437676191329956, Accuracy = 0.6896191835403442  
Iter #679936: Learning rate = 0.003914: Batch Loss = 1.333456, Accuracy = 0.70703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.474074363708496, Accuracy = 0.6770996451377869  
Iter #684032: Learning rate = 0.003914: Batch Loss = 1.314270, Accuracy = 0.716796875  
PERFORMANCE ON TEST SET: Batch Loss = 1.3424971103668213, Accuracy = 0.716796875

```
racy = 0.7203964591026306
Iter #688128: Learning rate = 0.003914: Batch Loss = 1.296818, Accuracy
= 0.72265625
PERFORMANCE ON TEST SET: Batch Loss = 1.2989777326583862, Accu
racy = 0.6937924027442932
Iter #692224: Learning rate = 0.003914: Batch Loss = 1.252436, Accuracy
= 0.7421875
PERFORMANCE ON TEST SET: Batch Loss = 1.3069181442260742, Accu
racy = 0.7238740921020508
Iter #696320: Learning rate = 0.003914: Batch Loss = 1.262465, Accuracy
= 0.720703125
PERFORMANCE ON TEST SET: Batch Loss = 1.3739274740219116, Accu
racy = 0.6998782753944397
Iter #700416: Learning rate = 0.003757: Batch Loss = 1.248495, Accuracy
= 0.734375
PERFORMANCE ON TEST SET: Batch Loss = 1.3010361194610596, Accu
racy = 0.6983133554458618
Iter #704512: Learning rate = 0.003757: Batch Loss = 1.262745, Accuracy
= 0.73828125
PERFORMANCE ON TEST SET: Batch Loss = 1.3610904216766357, Accu
racy = 0.6950095891952515
Iter #708608: Learning rate = 0.003757: Batch Loss = 1.306843, Accuracy
= 0.72265625
PERFORMANCE ON TEST SET: Batch Loss = 1.3312506675720215, Accu
racy = 0.6783168315887451
Iter #712704: Learning rate = 0.003757: Batch Loss = 1.220902, Accuracy
= 0.7578125
PERFORMANCE ON TEST SET: Batch Loss = 1.273938536643982, Accur
acy = 0.7330899238586426
Iter #716800: Learning rate = 0.003757: Batch Loss = 1.168954, Accuracy
= 0.775390625
PERFORMANCE ON TEST SET: Batch Loss = 1.2947503328323364, Accu
racy = 0.7287428379058838
Iter #720896: Learning rate = 0.003757: Batch Loss = 1.197111, Accuracy
= 0.76953125
PERFORMANCE ON TEST SET: Batch Loss = 1.2778799533843994, Accu
racy = 0.7296122312545776
Iter #724992: Learning rate = 0.003757: Batch Loss = 1.303566, Accuracy
= 0.7109375
PERFORMANCE ON TEST SET: Batch Loss = 1.295098066329956, Accur
acy = 0.701095461845398
Iter #729088: Learning rate = 0.003757: Batch Loss = 1.256155, Accuracy
= 0.71875
PERFORMANCE ON TEST SET: Batch Loss = 1.2959585189819336, Accu
racy = 0.7261345982551575
Iter #733184: Learning rate = 0.003757: Batch Loss = 1.206929, Accuracy
= 0.76171875
PERFORMANCE ON TEST SET: Batch Loss = 1.2741310596466064, Accu
racy = 0.7323943376541138
Iter #737280: Learning rate = 0.003757: Batch Loss = 1.241812, Accuracy
= 0.74609375
PERFORMANCE ON TEST SET: Batch Loss = 1.2651633024215698, Accu
racy = 0.7155277132987976
Iter #741376: Learning rate = 0.003757: Batch Loss = 1.227430, Accuracy
= 0.740234375
PERFORMANCE ON TEST SET: Batch Loss = 1.2359812259674072, Accu
racy = 0.747696042060852
Iter #745472: Learning rate = 0.003757: Batch Loss = 1.273331, Accuracy
= 0.744140625
PERFORMANCE ON TEST SET: Batch Loss = 1.2557384967803955, Accu
racy = 0.7358720302581787
```



Iter #749568: Learning rate = 0.003757: Batch Loss = 1.232625, Accuracy = 0.740234375  
PERFORMANCE ON TEST SET: Batch Loss = 1.3666536808013916, Accuracy = 0.7106590270996094  
Iter #753664: Learning rate = 0.003757: Batch Loss = 1.320456, Accuracy = 0.69921875  
PERFORMANCE ON TEST SET: Batch Loss = 1.3334109783172607, Accuracy = 0.6930968761444092  
Iter #757760: Learning rate = 0.003757: Batch Loss = 1.193168, Accuracy = 0.779296875  
PERFORMANCE ON TEST SET: Batch Loss = 1.2815539836883545, Accuracy = 0.7308294177055359  
Iter #761856: Learning rate = 0.003757: Batch Loss = 1.159685, Accuracy = 0.775390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2689461708068848, Accuracy = 0.7330899238586426  
Iter #765952: Learning rate = 0.003757: Batch Loss = 1.178314, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.2470251321792603, Accuracy = 0.7356981635093689  
Iter #770048: Learning rate = 0.003757: Batch Loss = 1.221081, Accuracy = 0.7421875  
PERFORMANCE ON TEST SET: Batch Loss = 1.294454574584961, Accuracy = 0.7080507874488831  
Iter #774144: Learning rate = 0.003757: Batch Loss = 1.257118, Accuracy = 0.73046875  
PERFORMANCE ON TEST SET: Batch Loss = 1.2873599529266357, Accuracy = 0.688401997089386  
Iter #778240: Learning rate = 0.003757: Batch Loss = 1.226128, Accuracy = 0.74609375  
PERFORMANCE ON TEST SET: Batch Loss = 1.2573223114013672, Accuracy = 0.7303077578544617  
Iter #782336: Learning rate = 0.003757: Batch Loss = 1.239028, Accuracy = 0.73046875  
PERFORMANCE ON TEST SET: Batch Loss = 1.2715098857879639, Accuracy = 0.6997044086456299  
Iter #786432: Learning rate = 0.003757: Batch Loss = 1.204247, Accuracy = 0.751953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.2909232378005981, Accuracy = 0.7280473113059998  
Iter #790528: Learning rate = 0.003757: Batch Loss = 1.178913, Accuracy = 0.759765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2500776052474976, Accuracy = 0.7355242371559143  
Iter #794624: Learning rate = 0.003757: Batch Loss = 1.234663, Accuracy = 0.744140625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2899547815322876, Accuracy = 0.6863154172897339  
Iter #798720: Learning rate = 0.003757: Batch Loss = 1.186783, Accuracy = 0.7578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.249901533126831, Accuracy = 0.7323943376541138  
Iter #802816: Learning rate = 0.003607: Batch Loss = 1.245442, Accuracy = 0.724609375  
PERFORMANCE ON TEST SET: Batch Loss = 1.2630853652954102, Accuracy = 0.7287428379058838  
Iter #806912: Learning rate = 0.003607: Batch Loss = 1.240891, Accuracy = 0.7265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2730265855789185, Accuracy = 0.6924013495445251  
Iter #811008: Learning rate = 0.003607: Batch Loss = 1.246924, Accuracy =

```
= 0.728515625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2656391859054565, Accu
racy = 0.7407407164573669
Iter #815104:  Learning rate = 0.003607:  Batch Loss = 1.155763, Accuracy
= 0.765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2334394454956055, Accu
racy = 0.7416101694107056
Iter #819200:  Learning rate = 0.003607:  Batch Loss = 1.270316, Accuracy
= 0.70703125
PERFORMANCE ON TEST SET:          Batch Loss = 1.2428205013275146, Accu
racy = 0.7358720302581787
Iter #823296:  Learning rate = 0.003607:  Batch Loss = 1.194757, Accuracy
= 0.763671875
PERFORMANCE ON TEST SET:          Batch Loss = 1.23284912109375, Accura
cy = 0.7388280034065247
Iter #827392:  Learning rate = 0.003607:  Batch Loss = 1.212878, Accuracy
= 0.73828125
PERFORMANCE ON TEST SET:          Batch Loss = 1.3371522426605225, Accu
racy = 0.6697965860366821
Iter #831488:  Learning rate = 0.003607:  Batch Loss = 1.219350, Accuracy
= 0.744140625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2593777179718018, Accu
racy = 0.7308294177055359
Iter #835584:  Learning rate = 0.003607:  Batch Loss = 1.214573, Accuracy
= 0.728515625
PERFORMANCE ON TEST SET:          Batch Loss = 1.31206214427948, Accura
cy = 0.7050947546958923
Iter #839680:  Learning rate = 0.003607:  Batch Loss = 1.233889, Accuracy
= 0.7421875
PERFORMANCE ON TEST SET:          Batch Loss = 1.263655424118042, Accur
acy = 0.724395751953125
Iter #843776:  Learning rate = 0.003607:  Batch Loss = 1.263289, Accuracy
= 0.712890625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2768659591674805, Accu
racy = 0.7316988110542297
Iter #847872:  Learning rate = 0.003607:  Batch Loss = 1.207096, Accuracy
= 0.73828125
PERFORMANCE ON TEST SET:          Batch Loss = 1.2700845003128052, Accu
racy = 0.7264823317527771
Iter #851968:  Learning rate = 0.003607:  Batch Loss = 1.202019, Accuracy
= 0.73828125
PERFORMANCE ON TEST SET:          Batch Loss = 1.255967617034912, Accur
acy = 0.7374369502067566
Iter #856064:  Learning rate = 0.003607:  Batch Loss = 1.223450, Accuracy
= 0.71875
PERFORMANCE ON TEST SET:          Batch Loss = 1.269404411315918, Accur
acy = 0.6924013495445251
Iter #860160:  Learning rate = 0.003607:  Batch Loss = 1.172800, Accuracy
= 0.775390625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2376048564910889, Accu
racy = 0.7431750893592834
Iter #864256:  Learning rate = 0.003607:  Batch Loss = 1.122565, Accuracy
= 0.759765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2062935829162598, Accu
racy = 0.7509998083114624
Iter #868352:  Learning rate = 0.003607:  Batch Loss = 1.277532, Accuracy
= 0.7265625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2447361946105957, Accu
racy = 0.7332637906074524
Iter #872448:  Learning rate = 0.003607:  Batch Loss = 1.190871, Accuracy
= 0.74609375
```

PERFORMANCE ON TEST SET: Batch Loss = 1.2701406478881836, Accuracy = 0.6804034113883972  
Iter #876544: Learning rate = 0.003607: Batch Loss = 1.221617, Accuracy = 0.759765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2214765548706055, Accuracy = 0.7405668497085571  
Iter #880640: Learning rate = 0.003607: Batch Loss = 1.181198, Accuracy = 0.72265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2424073219299316, Accuracy = 0.7356981635093689  
Iter #884736: Learning rate = 0.003607: Batch Loss = 1.266841, Accuracy = 0.72265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.3276904821395874, Accuracy = 0.7089201807975769  
Iter #888832: Learning rate = 0.003607: Batch Loss = 1.315230, Accuracy = 0.716796875  
PERFORMANCE ON TEST SET: Batch Loss = 1.4555960893630981, Accuracy = 0.665797233581543  
Iter #892928: Learning rate = 0.003607: Batch Loss = 1.260028, Accuracy = 0.720703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.2883548736572266, Accuracy = 0.7101373672485352  
Iter #897024: Learning rate = 0.003607: Batch Loss = 1.191475, Accuracy = 0.724609375  
PERFORMANCE ON TEST SET: Batch Loss = 1.209590196609497, Accuracy = 0.7235263586044312  
Iter #901120: Learning rate = 0.003463: Batch Loss = 1.223314, Accuracy = 0.75  
PERFORMANCE ON TEST SET: Batch Loss = 1.269482135772705, Accuracy = 0.7334376573562622  
Iter #905216: Learning rate = 0.003463: Batch Loss = 1.359107, Accuracy = 0.693359375  
PERFORMANCE ON TEST SET: Batch Loss = 1.2801330089569092, Accuracy = 0.7271778583526611  
Iter #909312: Learning rate = 0.003463: Batch Loss = 1.135830, Accuracy = 0.75390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2292490005493164, Accuracy = 0.7398713231086731  
Iter #913408: Learning rate = 0.003463: Batch Loss = 1.206129, Accuracy = 0.751953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.2572212219238281, Accuracy = 0.7290905714035034  
Iter #917504: Learning rate = 0.003463: Batch Loss = 1.106161, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.20521879196167, Accuracy = 0.7457833290100098  
Iter #921600: Learning rate = 0.003463: Batch Loss = 1.075208, Accuracy = 0.80078125  
PERFORMANCE ON TEST SET: Batch Loss = 1.2007334232330322, Accuracy = 0.7143105268478394  
Iter #925696: Learning rate = 0.003463: Batch Loss = 1.165758, Accuracy = 0.7421875  
PERFORMANCE ON TEST SET: Batch Loss = 1.2181956768035889, Accuracy = 0.7400451898574829  
Iter #929792: Learning rate = 0.003463: Batch Loss = 1.123657, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.226883888244629, Accuracy = 0.7271778583526611  
Iter #933888: Learning rate = 0.003463: Batch Loss = 1.153775, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2505993843078613, Accuracy = 0.765625

```
racy = 0.693270742893219
Iter #937984: Learning rate = 0.003463: Batch Loss = 1.099388, Accuracy
= 0.78125
PERFORMANCE ON TEST SET: Batch Loss = 1.205772876739502, Accu
racy = 0.7099635004997253
Iter #942080: Learning rate = 0.003463: Batch Loss = 1.213825, Accuracy
= 0.7109375
PERFORMANCE ON TEST SET: Batch Loss = 1.1982582807540894, Accu
racy = 0.7475221753120422
Iter #946176: Learning rate = 0.003463: Batch Loss = 1.238396, Accuracy
= 0.72265625
PERFORMANCE ON TEST SET: Batch Loss = 1.1784837245941162, Accu
racy = 0.7501304149627686
Iter #950272: Learning rate = 0.003463: Batch Loss = 1.205057, Accuracy
= 0.740234375
PERFORMANCE ON TEST SET: Batch Loss = 1.2215361595153809, Accu
racy = 0.7421318292617798
Iter #954368: Learning rate = 0.003463: Batch Loss = 1.204586, Accuracy
= 0.728515625
PERFORMANCE ON TEST SET: Batch Loss = 1.2257506847381592, Accu
racy = 0.7157016396522522
Iter #958464: Learning rate = 0.003463: Batch Loss = 1.162105, Accuracy
= 0.748046875
PERFORMANCE ON TEST SET: Batch Loss = 1.2051020860671997, Accu
racy = 0.7435228824615479
Iter #962560: Learning rate = 0.003463: Batch Loss = 1.157220, Accuracy
= 0.75
PERFORMANCE ON TEST SET: Batch Loss = 1.2265043258666992, Accu
racy = 0.7350026369094849
Iter #966656: Learning rate = 0.003463: Batch Loss = 1.113189, Accuracy
= 0.771484375
PERFORMANCE ON TEST SET: Batch Loss = 1.2094910144805908, Accu
racy = 0.737784743309021
Iter #970752: Learning rate = 0.003463: Batch Loss = 1.109542, Accuracy
= 0.775390625
PERFORMANCE ON TEST SET: Batch Loss = 1.205865502357483, Accur
acy = 0.7104851603507996
Iter #974848: Learning rate = 0.003463: Batch Loss = 1.151349, Accuracy
= 0.763671875
PERFORMANCE ON TEST SET: Batch Loss = 1.1983461380004883, Accu
racy = 0.7403929829597473
Iter #978944: Learning rate = 0.003463: Batch Loss = 1.237178, Accuracy
= 0.7265625
PERFORMANCE ON TEST SET: Batch Loss = 1.1944518089294434, Accu
racy = 0.7423056960105896
Iter #983040: Learning rate = 0.003463: Batch Loss = 1.215197, Accuracy
= 0.732421875
PERFORMANCE ON TEST SET: Batch Loss = 1.2176823616027832, Accu
racy = 0.7155277132987976
Iter #987136: Learning rate = 0.003463: Batch Loss = 1.138189, Accuracy
= 0.75390625
PERFORMANCE ON TEST SET: Batch Loss = 1.2076005935668945, Accu
racy = 0.7449139356613159
Iter #991232: Learning rate = 0.003463: Batch Loss = 1.242819, Accuracy
= 0.72265625
PERFORMANCE ON TEST SET: Batch Loss = 1.22664213180542, Accura
cy = 0.737089216709137
Iter #995328: Learning rate = 0.003463: Batch Loss = 1.152296, Accuracy
= 0.767578125
PERFORMANCE ON TEST SET: Batch Loss = 1.2383599281311035, Accu
racy = 0.7339593172073364
```

Iter #999424: Learning rate = 0.003463: Batch Loss = 1.173647, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2274386882781982, Accuracy = 0.7320466041564941  
Iter #1003520: Learning rate = 0.003324: Batch Loss = 1.148685, Accuracy = 0.75  
PERFORMANCE ON TEST SET: Batch Loss = 1.2099651098251343, Accuracy = 0.6988349556922913  
Iter #1007616: Learning rate = 0.003324: Batch Loss = 1.110898, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 1.2090102434158325, Accuracy = 0.7372630834579468  
Iter #1011712: Learning rate = 0.003324: Batch Loss = 1.146289, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2187511920928955, Accuracy = 0.6927490830421448  
Iter #1015808: Learning rate = 0.003324: Batch Loss = 1.139839, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.2025260925292969, Accuracy = 0.7442184090614319  
Iter #1019904: Learning rate = 0.003324: Batch Loss = 1.174099, Accuracy = 0.740234375  
PERFORMANCE ON TEST SET: Batch Loss = 1.178891897201538, Accuracy = 0.7489132285118103  
Iter #1024000: Learning rate = 0.003324: Batch Loss = 1.126517, Accuracy = 0.759765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.1835594177246094, Accuracy = 0.7457833290100098  
Iter #1028096: Learning rate = 0.003324: Batch Loss = 1.133618, Accuracy = 0.73828125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1934621334075928, Accuracy = 0.7172665596008301  
Iter #1032192: Learning rate = 0.003324: Batch Loss = 1.195170, Accuracy = 0.724609375  
PERFORMANCE ON TEST SET: Batch Loss = 1.176482915878296, Accuracy = 0.7235263586044312  
Iter #1036288: Learning rate = 0.003324: Batch Loss = 1.138812, Accuracy = 0.734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.2366979122161865, Accuracy = 0.7313510775566101  
Iter #1040384: Learning rate = 0.003324: Batch Loss = 1.100087, Accuracy = 0.763671875  
PERFORMANCE ON TEST SET: Batch Loss = 1.2413005828857422, Accuracy = 0.7296122312545776  
Iter #1044480: Learning rate = 0.003324: Batch Loss = 1.163728, Accuracy = 0.7421875  
PERFORMANCE ON TEST SET: Batch Loss = 1.2169625759124756, Accuracy = 0.7325682640075684  
Iter #1048576: Learning rate = 0.003324: Batch Loss = 1.239370, Accuracy = 0.72265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2068835496902466, Accuracy = 0.7332637906074524  
Iter #1052672: Learning rate = 0.003324: Batch Loss = 1.147866, Accuracy = 0.75390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2324965000152588, Accuracy = 0.7313510775566101  
Iter #1056768: Learning rate = 0.003324: Batch Loss = 1.110332, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.1922078132629395, Accuracy = 0.7473483085632324  
Iter #1060864: Learning rate = 0.003324: Batch Loss = 1.219769, Accuracy =

```
y = 0.6875
PERFORMANCE ON TEST SET:          Batch Loss = 1.1736798286437988, Accu
racy = 0.7490870952606201
Iter #1064960: Learning rate = 0.003324:  Batch Loss = 1.068718, Accurac
y = 0.794921875
PERFORMANCE ON TEST SET:          Batch Loss = 1.182934045791626, Accur
acy = 0.7407407164573669
Iter #1069056: Learning rate = 0.003324:  Batch Loss = 1.122719, Accurac
y = 0.75390625
PERFORMANCE ON TEST SET:          Batch Loss = 1.1685690879821777, Accu
racy = 0.747696042060852
Iter #1073152: Learning rate = 0.003324:  Batch Loss = 1.141710, Accurac
y = 0.767578125
PERFORMANCE ON TEST SET:          Batch Loss = 1.2125314474105835, Accu
racy = 0.6910102367401123
Iter #1077248: Learning rate = 0.003324:  Batch Loss = 1.191853, Accurac
y = 0.732421875
PERFORMANCE ON TEST SET:          Batch Loss = 1.2111785411834717, Accu
racy = 0.7395235896110535
Iter #1081344: Learning rate = 0.003324:  Batch Loss = 1.144769, Accurac
y = 0.759765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2182832956314087, Accu
racy = 0.7155277132987976
Iter #1085440: Learning rate = 0.003324:  Batch Loss = 1.178873, Accurac
y = 0.74609375
PERFORMANCE ON TEST SET:          Batch Loss = 1.2005038261413574, Accu
racy = 0.7438706159591675
Iter #1089536: Learning rate = 0.003324:  Batch Loss = 1.180037, Accurac
y = 0.7421875
PERFORMANCE ON TEST SET:          Batch Loss = 1.207581877708435, Accur
acy = 0.7363936901092529
Iter #1093632: Learning rate = 0.003324:  Batch Loss = 1.131612, Accurac
y = 0.751953125
PERFORMANCE ON TEST SET:          Batch Loss = 1.1856026649475098, Accu
racy = 0.7442184090614319
Iter #1097728: Learning rate = 0.003324:  Batch Loss = 1.162144, Accurac
y = 0.728515625
PERFORMANCE ON TEST SET:          Batch Loss = 1.1758962869644165, Accu
racy = 0.7468266487121582
Iter #1101824: Learning rate = 0.003191:  Batch Loss = 1.100184, Accurac
y = 0.787109375
PERFORMANCE ON TEST SET:          Batch Loss = 1.161110281944275, Accur
acy = 0.7577812671661377
Iter #1105920: Learning rate = 0.003191:  Batch Loss = 1.072707, Accurac
y = 0.783203125
PERFORMANCE ON TEST SET:          Batch Loss = 1.1880135536193848, Accu
racy = 0.7146583199501038
Iter #1110016: Learning rate = 0.003191:  Batch Loss = 1.123458, Accurac
y = 0.748046875
PERFORMANCE ON TEST SET:          Batch Loss = 1.1687402725219727, Accu
racy = 0.7497826218605042
Iter #1114112: Learning rate = 0.003191:  Batch Loss = 1.104726, Accurac
y = 0.759765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.1677427291870117, Accu
racy = 0.7468266487121582
Iter #1118208: Learning rate = 0.003191:  Batch Loss = 1.117300, Accurac
y = 0.7578125
PERFORMANCE ON TEST SET:          Batch Loss = 1.240354061126709, Accur
acy = 0.7273517847061157
Iter #1122304: Learning rate = 0.003191:  Batch Loss = 1.162065, Accurac
y = 0.740234375
```

PERFORMANCE ON TEST SET: Batch Loss = 1.1769474744796753, Accuracy = 0.7186576128005981  
Iter #1126400: Learning rate = 0.003191: Batch Loss = 1.103808, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.1816388368606567, Accuracy = 0.7360458970069885  
Iter #1130496: Learning rate = 0.003191: Batch Loss = 1.113840, Accuracy = 0.740234375  
PERFORMANCE ON TEST SET: Batch Loss = 1.2219798564910889, Accuracy = 0.6974439024925232  
Iter #1134592: Learning rate = 0.003191: Batch Loss = 1.177770, Accuracy = 0.712890625  
PERFORMANCE ON TEST SET: Batch Loss = 1.1869109869003296, Accuracy = 0.7383064031600952  
Iter #1138688: Learning rate = 0.003191: Batch Loss = 1.094514, Accuracy = 0.775390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.1651204824447632, Accuracy = 0.7527386546134949  
Iter #1142784: Learning rate = 0.003191: Batch Loss = 1.080745, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1697293519973755, Accuracy = 0.7452616691589355  
Iter #1146880: Learning rate = 0.003191: Batch Loss = 1.099609, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.1377360820770264, Accuracy = 0.758998453617096  
Iter #1150976: Learning rate = 0.003191: Batch Loss = 1.093319, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.1396219730377197, Accuracy = 0.754825234413147  
Iter #1155072: Learning rate = 0.003191: Batch Loss = 1.036572, Accuracy = 0.794921875  
PERFORMANCE ON TEST SET: Batch Loss = 1.1371163129806519, Accuracy = 0.7355242371559143  
Iter #1159168: Learning rate = 0.003191: Batch Loss = 1.063365, Accuracy = 0.78125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1456021070480347, Accuracy = 0.7520431280136108  
Iter #1163264: Learning rate = 0.003191: Batch Loss = 1.099315, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.150299310684204, Accuracy = 0.7509998083114624  
Iter #1167360: Learning rate = 0.003191: Batch Loss = 1.044715, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.124154806137085, Accuracy = 0.7600417137145996  
Iter #1171456: Learning rate = 0.003191: Batch Loss = 1.079661, Accuracy = 0.7578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1579296588897705, Accuracy = 0.7530864477157593  
Iter #1175552: Learning rate = 0.003191: Batch Loss = 1.151993, Accuracy = 0.740234375  
PERFORMANCE ON TEST SET: Batch Loss = 1.2518888711929321, Accuracy = 0.7104851603507996  
Iter #1179648: Learning rate = 0.003191: Batch Loss = 1.137970, Accuracy = 0.75390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.2066452503204346, Accuracy = 0.7337854504585266  
Iter #1183744: Learning rate = 0.003191: Batch Loss = 1.256392, Accuracy = 0.685546875  
PERFORMANCE ON TEST SET: Batch Loss = 1.1551403999328613, Accuracy = 0.7186576128005981

```
racy = 0.7520431280136108
Iter #1187840: Learning rate = 0.003191: Batch Loss = 1.118422, Accuracy = 0.7578125
PERFORMANCE ON TEST SET: Batch Loss = 1.1554440259933472, Accuracy = 0.7475221753120422
Iter #1191936: Learning rate = 0.003191: Batch Loss = 1.035783, Accuracy = 0.791015625
PERFORMANCE ON TEST SET: Batch Loss = 1.1319046020507812, Accuracy = 0.7558685541152954
Iter #1196032: Learning rate = 0.003191: Batch Loss = 1.110743, Accuracy = 0.748046875
PERFORMANCE ON TEST SET: Batch Loss = 1.1277339458465576, Accuracy = 0.7595200538635254
Iter #1200128: Learning rate = 0.003064: Batch Loss = 1.190066, Accuracy = 0.740234375
PERFORMANCE ON TEST SET: Batch Loss = 1.2948157787322998, Accuracy = 0.6990088820457458
Iter #1204224: Learning rate = 0.003064: Batch Loss = 1.020924, Accuracy = 0.80859375
PERFORMANCE ON TEST SET: Batch Loss = 1.1926498413085938, Accuracy = 0.7310032844543457
Iter #1208320: Learning rate = 0.003064: Batch Loss = 1.195525, Accuracy = 0.7421875
PERFORMANCE ON TEST SET: Batch Loss = 1.1297305822372437, Accuracy = 0.7605633735656738
Iter #1212416: Learning rate = 0.003064: Batch Loss = 1.094507, Accuracy = 0.765625
PERFORMANCE ON TEST SET: Batch Loss = 1.1512718200683594, Accuracy = 0.7541297078132629
Iter #1216512: Learning rate = 0.003064: Batch Loss = 1.137871, Accuracy = 0.740234375
PERFORMANCE ON TEST SET: Batch Loss = 1.1082228422164917, Accuracy = 0.7680403590202332
Iter #1220608: Learning rate = 0.003064: Batch Loss = 1.045623, Accuracy = 0.783203125
PERFORMANCE ON TEST SET: Batch Loss = 1.1285738945007324, Accuracy = 0.7544775009155273
Iter #1224704: Learning rate = 0.003064: Batch Loss = 1.058982, Accuracy = 0.796875
PERFORMANCE ON TEST SET: Batch Loss = 1.1034573316574097, Accuracy = 0.7591723203659058
Iter #1228800: Learning rate = 0.003064: Batch Loss = 1.129120, Accuracy = 0.75390625
PERFORMANCE ON TEST SET: Batch Loss = 1.1381762027740479, Accuracy = 0.7563902139663696
Iter #1232896: Learning rate = 0.003064: Batch Loss = 1.048266, Accuracy = 0.77734375
PERFORMANCE ON TEST SET: Batch Loss = 1.1590545177459717, Accuracy = 0.7226569056510925
Iter #1236992: Learning rate = 0.003064: Batch Loss = 1.081789, Accuracy = 0.748046875
PERFORMANCE ON TEST SET: Batch Loss = 1.1505863666534424, Accuracy = 0.7202225923538208
Iter #1241088: Learning rate = 0.003064: Batch Loss = 1.071091, Accuracy = 0.765625
PERFORMANCE ON TEST SET: Batch Loss = 1.1201765537261963, Accuracy = 0.7642149329185486
Iter #1245184: Learning rate = 0.003064: Batch Loss = 0.987554, Accuracy = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 1.089844822883606, Accuracy = 0.7381324768066406
```



Iter #1249280: Learning rate = 0.003064: Batch Loss = 1.088638, Accuracy = 0.767578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1103335618972778, Accuracy = 0.7572596073150635  
Iter #1253376: Learning rate = 0.003064: Batch Loss = 1.086179, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1209150552749634, Accuracy = 0.7650843262672424  
Iter #1257472: Learning rate = 0.003064: Batch Loss = 1.086447, Accuracy = 0.76171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.1016472578048706, Accuracy = 0.7638671398162842  
Iter #1261568: Learning rate = 0.003064: Batch Loss = 1.031532, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0916762351989746, Accuracy = 0.7697791457176208  
Iter #1265664: Learning rate = 0.003064: Batch Loss = 1.085721, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.1414904594421387, Accuracy = 0.7485654950141907  
Iter #1269760: Learning rate = 0.003064: Batch Loss = 1.082261, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.140390157699585, Accuracy = 0.7259607315063477  
Iter #1273856: Learning rate = 0.003064: Batch Loss = 1.007086, Accuracy = 0.798828125  
PERFORMANCE ON TEST SET: Batch Loss = 1.117671251296997, Accuracy = 0.76334547996521  
Iter #1277952: Learning rate = 0.003064: Batch Loss = 0.992834, Accuracy = 0.810546875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0951639413833618, Accuracy = 0.7697791457176208  
Iter #1282048: Learning rate = 0.003064: Batch Loss = 1.059710, Accuracy = 0.7890625  
PERFORMANCE ON TEST SET: Batch Loss = 1.1145819425582886, Accuracy = 0.7600417137145996  
Iter #1286144: Learning rate = 0.003064: Batch Loss = 1.050372, Accuracy = 0.80078125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1324446201324463, Accuracy = 0.755520761013031  
Iter #1290240: Learning rate = 0.003064: Batch Loss = 1.057630, Accuracy = 0.791015625  
PERFORMANCE ON TEST SET: Batch Loss = 1.1175663471221924, Accuracy = 0.75969398021698  
Iter #1294336: Learning rate = 0.003064: Batch Loss = 1.184515, Accuracy = 0.716796875  
PERFORMANCE ON TEST SET: Batch Loss = 1.1471482515335083, Accuracy = 0.7522169947624207  
Iter #1298432: Learning rate = 0.003064: Batch Loss = 1.031288, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0969882011413574, Accuracy = 0.7405668497085571  
Iter #1302528: Learning rate = 0.002941: Batch Loss = 1.019033, Accuracy = 0.78125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0974323749542236, Accuracy = 0.7638671398162842  
Iter #1306624: Learning rate = 0.002941: Batch Loss = 1.135507, Accuracy = 0.748046875  
PERFORMANCE ON TEST SET: Batch Loss = 1.1332731246948242, Accuracy = 0.7276995182037354  
Iter #1310720: Learning rate = 0.002941: Batch Loss = 1.025180, Accuracy =

```
y = 0.78125
PERFORMANCE ON TEST SET:          Batch Loss = 1.1182600259780884, Accu
racy = 0.7690836191177368
Iter #1314816: Learning rate = 0.002941:  Batch Loss = 1.136992, Accurac
y = 0.759765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.1834638118743896, Accu
racy = 0.7350026369094849
Iter #1318912: Learning rate = 0.002941:  Batch Loss = 1.045726, Accurac
y = 0.763671875
PERFORMANCE ON TEST SET:          Batch Loss = 1.143284559249878, Accur
acy = 0.7195270657539368
Iter #1323008: Learning rate = 0.002941:  Batch Loss = 1.015148, Accurac
y = 0.783203125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0645220279693604, Accu
racy = 0.7753434181213379
Iter #1327104: Learning rate = 0.002941:  Batch Loss = 1.069362, Accurac
y = 0.771484375
PERFORMANCE ON TEST SET:          Batch Loss = 1.0790313482284546, Accu
racy = 0.7749956250190735
Iter #1331200: Learning rate = 0.002941:  Batch Loss = 1.077284, Accurac
y = 0.75390625
PERFORMANCE ON TEST SET:          Batch Loss = 1.0978786945343018, Accu
racy = 0.7344809770584106
Iter #1335296: Learning rate = 0.002941:  Batch Loss = 1.104882, Accurac
y = 0.7421875
PERFORMANCE ON TEST SET:          Batch Loss = 1.2542698383331299, Accu
racy = 0.6948356628417969
Iter #1339392: Learning rate = 0.002941:  Batch Loss = 1.033936, Accurac
y = 0.7734375
PERFORMANCE ON TEST SET:          Batch Loss = 1.1160354614257812, Accu
racy = 0.7556946873664856
Iter #1343488: Learning rate = 0.002941:  Batch Loss = 1.088041, Accurac
y = 0.76953125
PERFORMANCE ON TEST SET:          Batch Loss = 1.122750163078308, Accur
acy = 0.7586506605148315
Iter #1347584: Learning rate = 0.002941:  Batch Loss = 1.052256, Accurac
y = 0.771484375
PERFORMANCE ON TEST SET:          Batch Loss = 1.1215603351593018, Accu
racy = 0.7308294177055359
Iter #1351680: Learning rate = 0.002941:  Batch Loss = 1.065774, Accurac
y = 0.76171875
PERFORMANCE ON TEST SET:          Batch Loss = 1.0660760402679443, Accu
racy = 0.7763867378234863
Iter #1355776: Learning rate = 0.002941:  Batch Loss = 1.001461, Accurac
y = 0.796875
PERFORMANCE ON TEST SET:          Batch Loss = 1.0763602256774902, Accu
racy = 0.7770822644233704
Iter #1359872: Learning rate = 0.002941:  Batch Loss = 0.980563, Accurac
y = 0.783203125
PERFORMANCE ON TEST SET:          Batch Loss = 1.069732666015625, Accur
acy = 0.7494348883628845
Iter #1363968: Learning rate = 0.002941:  Batch Loss = 1.004383, Accurac
y = 0.767578125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0604956150054932, Accu
racy = 0.755520761013031
Iter #1368064: Learning rate = 0.002941:  Batch Loss = 1.037492, Accurac
y = 0.77734375
PERFORMANCE ON TEST SET:          Batch Loss = 1.0756494998931885, Accu
racy = 0.7386541366577148
Iter #1372160: Learning rate = 0.002941:  Batch Loss = 0.986197, Accurac
y = 0.80078125
```

PERFORMANCE ON TEST SET: Batch Loss = 1.0785447359085083, Accuracy = 0.7642149329185486  
Iter #1376256: Learning rate = 0.002941: Batch Loss = 0.999449, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0671353340148926, Accuracy = 0.7715179920196533  
Iter #1380352: Learning rate = 0.002941: Batch Loss = 1.094628, Accuracy = 0.75390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.129581093788147, Accuracy = 0.7198747992515564  
Iter #1384448: Learning rate = 0.002941: Batch Loss = 1.018920, Accuracy = 0.775390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0830916166305542, Accuracy = 0.769605278968811  
Iter #1388544: Learning rate = 0.002941: Batch Loss = 0.982512, Accuracy = 0.814453125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0939812660217285, Accuracy = 0.7450878024101257  
Iter #1392640: Learning rate = 0.002941: Batch Loss = 1.086622, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0775742530822754, Accuracy = 0.7706485986709595  
Iter #1396736: Learning rate = 0.002941: Batch Loss = 1.011496, Accuracy = 0.791015625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0529260635375977, Accuracy = 0.7795165777206421  
Iter #1400832: Learning rate = 0.002823: Batch Loss = 1.081436, Accuracy = 0.75390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0997284650802612, Accuracy = 0.7323943376541138  
Iter #1404928: Learning rate = 0.002823: Batch Loss = 1.030347, Accuracy = 0.78125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1064238548278809, Accuracy = 0.741436243057251  
Iter #1409024: Learning rate = 0.002823: Batch Loss = 1.029403, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0846680402755737, Accuracy = 0.7443922758102417  
Iter #1413120: Learning rate = 0.002823: Batch Loss = 1.060438, Accuracy = 0.76171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.2092645168304443, Accuracy = 0.7163971662521362  
Iter #1417216: Learning rate = 0.002823: Batch Loss = 1.101009, Accuracy = 0.75  
PERFORMANCE ON TEST SET: Batch Loss = 1.132475733757019, Accuracy = 0.7410885095596313  
Iter #1421312: Learning rate = 0.002823: Batch Loss = 1.062394, Accuracy = 0.767578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.052087426185608, Accuracy = 0.7553468942642212  
Iter #1425408: Learning rate = 0.002823: Batch Loss = 1.042004, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.2360265254974365, Accuracy = 0.6892714500427246  
Iter #1429504: Learning rate = 0.002823: Batch Loss = 1.010729, Accuracy = 0.767578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0981879234313965, Accuracy = 0.7628238797187805  
Iter #1433600: Learning rate = 0.002823: Batch Loss = 0.975663, Accuracy = 0.80078125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1192209720611572, Accuracy =

```
racy = 0.7593461871147156
Iter #1437696: Learning rate = 0.002823: Batch Loss = 1.117724, Accuracy = 0.755859375
PERFORMANCE ON TEST SET: Batch Loss = 1.0803489685058594, Accuracy = 0.7659537196159363
Iter #1441792: Learning rate = 0.002823: Batch Loss = 0.988126, Accuracy = 0.783203125
PERFORMANCE ON TEST SET: Batch Loss = 1.1528129577636719, Accuracy = 0.7351765036582947
Iter #1445888: Learning rate = 0.002823: Batch Loss = 1.018625, Accuracy = 0.78515625
PERFORMANCE ON TEST SET: Batch Loss = 1.0774723291397095, Accuracy = 0.7725613117218018
Iter #1449984: Learning rate = 0.002823: Batch Loss = 1.023714, Accuracy = 0.796875
PERFORMANCE ON TEST SET: Batch Loss = 1.3513617515563965, Accuracy = 0.6817944645881653
Iter #1454080: Learning rate = 0.002823: Batch Loss = 1.002318, Accuracy = 0.794921875
PERFORMANCE ON TEST SET: Batch Loss = 1.0869040489196777, Accuracy = 0.7642149329185486
Iter #1458176: Learning rate = 0.002823: Batch Loss = 1.077110, Accuracy = 0.734375
PERFORMANCE ON TEST SET: Batch Loss = 1.092512607574463, Accuracy = 0.7395235896110535
Iter #1462272: Learning rate = 0.002823: Batch Loss = 0.989524, Accuracy = 0.810546875
PERFORMANCE ON TEST SET: Batch Loss = 1.058807373046875, Accuracy = 0.7739523649215698
Iter #1466368: Learning rate = 0.002823: Batch Loss = 1.035892, Accuracy = 0.77734375
PERFORMANCE ON TEST SET: Batch Loss = 1.0597398281097412, Accuracy = 0.7716918587684631
Iter #1470464: Learning rate = 0.002823: Batch Loss = 0.999967, Accuracy = 0.783203125
PERFORMANCE ON TEST SET: Batch Loss = 1.047798752784729, Accuracy = 0.7784733176231384
Iter #1474560: Learning rate = 0.002823: Batch Loss = 0.988230, Accuracy = 0.794921875
PERFORMANCE ON TEST SET: Batch Loss = 1.0826596021652222, Accuracy = 0.7393496632575989
Iter #1478656: Learning rate = 0.002823: Batch Loss = 0.968140, Accuracy = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 1.0683870315551758, Accuracy = 0.7426534295082092
Iter #1482752: Learning rate = 0.002823: Batch Loss = 1.021802, Accuracy = 0.794921875
PERFORMANCE ON TEST SET: Batch Loss = 1.06016206741333, Accuracy = 0.7704746723175049
Iter #1486848: Learning rate = 0.002823: Batch Loss = 1.002370, Accuracy = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 1.0800378322601318, Accuracy = 0.747696042060852
Iter #1490944: Learning rate = 0.002823: Batch Loss = 0.975460, Accuracy = 0.7890625
PERFORMANCE ON TEST SET: Batch Loss = 1.0677701234817505, Accuracy = 0.7543035745620728
Iter #1495040: Learning rate = 0.002823: Batch Loss = 0.989045, Accuracy = 0.806640625
PERFORMANCE ON TEST SET: Batch Loss = 1.032030463218689, Accuracy = 0.778125524520874
```

Iter #1499136: Learning rate = 0.002823: Batch Loss = 0.920823, Accuracy = 0.833984375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0400888919830322, Accuracy = 0.7782994508743286  
Iter #1503232: Learning rate = 0.002710: Batch Loss = 1.084355, Accuracy = 0.783203125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0827560424804688, Accuracy = 0.7525647878646851  
Iter #1507328: Learning rate = 0.002710: Batch Loss = 1.004571, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0604846477508545, Accuracy = 0.7657798528671265  
Iter #1511424: Learning rate = 0.002710: Batch Loss = 0.961999, Accuracy = 0.80859375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0682778358459473, Accuracy = 0.7504781484603882  
Iter #1515520: Learning rate = 0.002710: Batch Loss = 0.963803, Accuracy = 0.802734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0499320030212402, Accuracy = 0.7537819743156433  
Iter #1519616: Learning rate = 0.002710: Batch Loss = 1.036237, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0532357692718506, Accuracy = 0.7504781484603882  
Iter #1523712: Learning rate = 0.002710: Batch Loss = 1.083717, Accuracy = 0.748046875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0663869380950928, Accuracy = 0.7428273558616638  
Iter #1527808: Learning rate = 0.002710: Batch Loss = 1.023219, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0791935920715332, Accuracy = 0.7711702585220337  
Iter #1531904: Learning rate = 0.002710: Batch Loss = 0.954356, Accuracy = 0.806640625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0383235216140747, Accuracy = 0.7626499533653259  
Iter #1536000: Learning rate = 0.002710: Batch Loss = 0.963677, Accuracy = 0.79296875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0435419082641602, Accuracy = 0.7569118142127991  
Iter #1540096: Learning rate = 0.002710: Batch Loss = 1.000395, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0436553955078125, Accuracy = 0.7541297078132629  
Iter #1544192: Learning rate = 0.002710: Batch Loss = 1.022665, Accuracy = 0.779296875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0347216129302979, Accuracy = 0.7494348883628845  
Iter #1548288: Learning rate = 0.002710: Batch Loss = 1.028026, Accuracy = 0.78515625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0825071334838867, Accuracy = 0.764041006565094  
Iter #1552384: Learning rate = 0.002710: Batch Loss = 0.992770, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 1.053978443145752, Accuracy = 0.7499565482139587  
Iter #1556480: Learning rate = 0.002710: Batch Loss = 0.950835, Accuracy = 0.818359375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0554957389831543, Accuracy = 0.7449139356613159  
Iter #1560576: Learning rate = 0.002710: Batch Loss = 1.016983, Accuracy =

```
y = 0.7734375
PERFORMANCE ON TEST SET:          Batch Loss = 1.0589797496795654, Accu
racy = 0.761085033416748
Iter #1564672: Learning rate = 0.002710:  Batch Loss = 1.006269, Accurac
y = 0.77734375
PERFORMANCE ON TEST SET:          Batch Loss = 1.0475605726242065, Accu
racy = 0.7814292907714844
Iter #1568768: Learning rate = 0.002710:  Batch Loss = 1.010420, Accurac
y = 0.78125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0468571186065674, Accu
racy = 0.773082971572876
Iter #1572864: Learning rate = 0.002710:  Batch Loss = 0.980588, Accurac
y = 0.802734375
PERFORMANCE ON TEST SET:          Batch Loss = 1.097536563873291, Accur
acy = 0.7654321193695068
Iter #1576960: Learning rate = 0.002710:  Batch Loss = 0.981525, Accurac
y = 0.8203125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0341451168060303, Accu
racy = 0.77377849817276
Iter #1581056: Learning rate = 0.002710:  Batch Loss = 1.016225, Accurac
y = 0.76953125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0494534969329834, Accu
racy = 0.774474024772644
Iter #1585152: Learning rate = 0.002710:  Batch Loss = 1.031667, Accurac
y = 0.76171875
PERFORMANCE ON TEST SET:          Batch Loss = 1.0799517631530762, Accu
racy = 0.7445661425590515
Iter #1589248: Learning rate = 0.002710:  Batch Loss = 0.965658, Accurac
y = 0.78515625
PERFORMANCE ON TEST SET:          Batch Loss = 1.0403631925582886, Accu
racy = 0.7791688442230225
Iter #1593344: Learning rate = 0.002710:  Batch Loss = 0.943323, Accurac
y = 0.818359375
PERFORMANCE ON TEST SET:          Batch Loss = 1.064902663230896, Accur
acy = 0.7480438351631165
Iter #1597440: Learning rate = 0.002710:  Batch Loss = 1.009954, Accurac
y = 0.76953125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0514155626296997, Accu
racy = 0.7543035745620728
Iter #1601536: Learning rate = 0.002602:  Batch Loss = 0.947811, Accurac
y = 0.806640625
PERFORMANCE ON TEST SET:          Batch Loss = 1.0739537477493286, Accu
racy = 0.7569118142127991
Iter #1605632: Learning rate = 0.002602:  Batch Loss = 1.041207, Accurac
y = 0.7578125
PERFORMANCE ON TEST SET:          Batch Loss = 1.1098374128341675, Accu
racy = 0.7221353054046631
Iter #1609728: Learning rate = 0.002602:  Batch Loss = 1.055181, Accurac
y = 0.787109375
PERFORMANCE ON TEST SET:          Batch Loss = 1.0811060667037964, Accu
racy = 0.7636932730674744
Iter #1613824: Learning rate = 0.002602:  Batch Loss = 0.984855, Accurac
y = 0.798828125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0700128078460693, Accu
racy = 0.7579551339149475
Iter #1617920: Learning rate = 0.002602:  Batch Loss = 1.017498, Accurac
y = 0.7890625
PERFORMANCE ON TEST SET:          Batch Loss = 1.066851019859314, Accur
acy = 0.7614327669143677
Iter #1622016: Learning rate = 0.002602:  Batch Loss = 0.976790, Accurac
y = 0.78515625
```

PERFORMANCE ON TEST SET: Batch Loss = 1.0506854057312012, Accuracy = 0.7709963321685791  
Iter #1626112: Learning rate = 0.002602: Batch Loss = 1.047369, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.047089695930481, Accuracy = 0.7708224654197693  
Iter #1630208: Learning rate = 0.002602: Batch Loss = 1.013215, Accuracy = 0.78515625  
PERFORMANCE ON TEST SET: Batch Loss = 1.09821617603302, Accuracy = 0.7433489561080933  
Iter #1634304: Learning rate = 0.002602: Batch Loss = 0.913662, Accuracy = 0.826171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0516241788864136, Accuracy = 0.7758650779724121  
Iter #1638400: Learning rate = 0.002602: Batch Loss = 1.098814, Accuracy = 0.744140625  
PERFORMANCE ON TEST SET: Batch Loss = 1.1114096641540527, Accuracy = 0.7191792726516724  
Iter #1642496: Learning rate = 0.002602: Batch Loss = 1.005033, Accuracy = 0.78125  
PERFORMANCE ON TEST SET: Batch Loss = 1.065004587173462, Accuracy = 0.7703008055686951  
Iter #1646592: Learning rate = 0.002602: Batch Loss = 0.975548, Accuracy = 0.796875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0457868576049805, Accuracy = 0.7471743822097778  
Iter #1650688: Learning rate = 0.002602: Batch Loss = 1.021883, Accuracy = 0.783203125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0710010528564453, Accuracy = 0.7668231725692749  
Iter #1654784: Learning rate = 0.002602: Batch Loss = 1.012290, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0645990371704102, Accuracy = 0.7358720302581787  
Iter #1658880: Learning rate = 0.002602: Batch Loss = 0.964328, Accuracy = 0.7890625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0475435256958008, Accuracy = 0.7629977464675903  
Iter #1662976: Learning rate = 0.002602: Batch Loss = 1.023030, Accuracy = 0.796875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0411654710769653, Accuracy = 0.7489132285118103  
Iter #1667072: Learning rate = 0.002602: Batch Loss = 1.015789, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.052968978881836, Accuracy = 0.7706485986709595  
Iter #1671168: Learning rate = 0.002602: Batch Loss = 0.992228, Accuracy = 0.79296875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0453262329101562, Accuracy = 0.7675186991691589  
Iter #1675264: Learning rate = 0.002602: Batch Loss = 1.006626, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0343981981277466, Accuracy = 0.7736045718193054  
Iter #1679360: Learning rate = 0.002602: Batch Loss = 1.134959, Accuracy = 0.712890625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0683435201644897, Accuracy = 0.734307050704956  
Iter #1683456: Learning rate = 0.002602: Batch Loss = 1.029807, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.108661413192749, Accuracy =

```
acy = 0.7501304149627686
Iter #1687552: Learning rate = 0.002602: Batch Loss = 1.002633, Accurac
y = 0.794921875
PERFORMANCE ON TEST SET: Batch Loss = 1.0694506168365479, Accu
racy = 0.7680403590202332
Iter #1691648: Learning rate = 0.002602: Batch Loss = 0.931768, Accurac
y = 0.8046875
PERFORMANCE ON TEST SET: Batch Loss = 1.074845790863037, Accur
acy = 0.7593461871147156
Iter #1695744: Learning rate = 0.002602: Batch Loss = 0.987920, Accurac
y = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 1.0363272428512573, Accu
racy = 0.7729090452194214
Iter #1699840: Learning rate = 0.002602: Batch Loss = 0.996746, Accurac
y = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 1.0523463487625122, Accu
racy = 0.7664753794670105
Iter #1703936: Learning rate = 0.002498: Batch Loss = 0.943786, Accurac
y = 0.80859375
PERFORMANCE ON TEST SET: Batch Loss = 1.0273220539093018, Accu
racy = 0.7546513676643372
Iter #1708032: Learning rate = 0.002498: Batch Loss = 1.014014, Accurac
y = 0.759765625
PERFORMANCE ON TEST SET: Batch Loss = 1.0647377967834473, Accu
racy = 0.7296122312545776
Iter #1712128: Learning rate = 0.002498: Batch Loss = 0.925235, Accurac
y = 0.814453125
PERFORMANCE ON TEST SET: Batch Loss = 1.0534108877182007, Accu
racy = 0.7480438351631165
Iter #1716224: Learning rate = 0.002498: Batch Loss = 0.980308, Accurac
y = 0.791015625
PERFORMANCE ON TEST SET: Batch Loss = 1.0430864095687866, Accu
racy = 0.7496087551116943
Iter #1720320: Learning rate = 0.002498: Batch Loss = 0.956059, Accurac
y = 0.798828125
PERFORMANCE ON TEST SET: Batch Loss = 1.052419662475586, Accur
acy = 0.7313510775566101
Iter #1724416: Learning rate = 0.002498: Batch Loss = 1.015545, Accurac
y = 0.767578125
PERFORMANCE ON TEST SET: Batch Loss = 1.0356419086456299, Accu
racy = 0.768909752368927
Iter #1728512: Learning rate = 0.002498: Batch Loss = 0.968507, Accurac
y = 0.798828125
PERFORMANCE ON TEST SET: Batch Loss = 1.0755890607833862, Accu
racy = 0.738480269908905
Iter #1732608: Learning rate = 0.002498: Batch Loss = 1.035042, Accurac
y = 0.7578125
PERFORMANCE ON TEST SET: Batch Loss = 1.096348524093628, Accur
acy = 0.7621283531188965
Iter #1736704: Learning rate = 0.002498: Batch Loss = 1.041259, Accurac
y = 0.76171875
PERFORMANCE ON TEST SET: Batch Loss = 1.0721579790115356, Accu
racy = 0.7473483085632324
Iter #1740800: Learning rate = 0.002498: Batch Loss = 1.038128, Accurac
y = 0.763671875
PERFORMANCE ON TEST SET: Batch Loss = 1.0565383434295654, Accu
racy = 0.7614327669143677
Iter #1744896: Learning rate = 0.002498: Batch Loss = 1.024306, Accurac
y = 0.759765625
PERFORMANCE ON TEST SET: Batch Loss = 1.0482994318008423, Accu
racy = 0.7663015127182007
```



Iter #1748992: Learning rate = 0.002498: Batch Loss = 0.908800, Accuracy = 0.8125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0207167863845825, Accuracy = 0.7464788556098938  
Iter #1753088: Learning rate = 0.002498: Batch Loss = 1.041842, Accuracy = 0.751953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.076602578163147, Accuracy = 0.7386541366577148  
Iter #1757184: Learning rate = 0.002498: Batch Loss = 0.928108, Accuracy = 0.818359375  
PERFORMANCE ON TEST SET: Batch Loss = 1.025555968284607, Accuracy = 0.7713441252708435  
Iter #1761280: Learning rate = 0.002498: Batch Loss = 0.937429, Accuracy = 0.80078125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0207650661468506, Accuracy = 0.751869261264801  
Iter #1765376: Learning rate = 0.002498: Batch Loss = 0.966179, Accuracy = 0.779296875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0598074197769165, Accuracy = 0.7480438351631165  
Iter #1769472: Learning rate = 0.002498: Batch Loss = 0.918595, Accuracy = 0.8203125  
PERFORMANCE ON TEST SET: Batch Loss = 1.01669442653656, Accuracy = 0.778125524520874  
Iter #1773568: Learning rate = 0.002498: Batch Loss = 0.893030, Accuracy = 0.830078125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0269782543182373, Accuracy = 0.7419579029083252  
Iter #1777664: Learning rate = 0.002498: Batch Loss = 0.963337, Accuracy = 0.7890625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0102384090423584, Accuracy = 0.7523908615112305  
Iter #1781760: Learning rate = 0.002498: Batch Loss = 1.017827, Accuracy = 0.74609375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0422606468200684, Accuracy = 0.758998453617096  
Iter #1785856: Learning rate = 0.002498: Batch Loss = 0.942958, Accuracy = 0.810546875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0233336687088013, Accuracy = 0.7645626664161682  
Iter #1789952: Learning rate = 0.002498: Batch Loss = 1.044815, Accuracy = 0.75  
PERFORMANCE ON TEST SET: Batch Loss = 1.041660189628601, Accuracy = 0.7690836191177368  
Iter #1794048: Learning rate = 0.002498: Batch Loss = 0.876921, Accuracy = 0.818359375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0874338150024414, Accuracy = 0.7391757965087891  
Iter #1798144: Learning rate = 0.002498: Batch Loss = 1.171795, Accuracy = 0.7109375  
PERFORMANCE ON TEST SET: Batch Loss = 1.210585117340088, Accuracy = 0.6998782753944397  
Iter #1802240: Learning rate = 0.002398: Batch Loss = 1.024077, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.1524709463119507, Accuracy = 0.718831479549408  
Iter #1806336: Learning rate = 0.002398: Batch Loss = 0.995012, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0060489177703857, Accuracy = 0.7558685541152954  
Iter #1810432: Learning rate = 0.002398: Batch Loss = 1.115390, Accuracy =

```
y = 0.7265625
PERFORMANCE ON TEST SET:          Batch Loss = 1.2471998929977417, Accu
racy = 0.6903147101402283
Iter #1814528: Learning rate = 0.002398: Batch Loss = 1.146706, Accurac
y = 0.732421875
PERFORMANCE ON TEST SET:          Batch Loss = 1.1741793155670166, Accu
racy = 0.7186576128005981
Iter #1818624: Learning rate = 0.002398: Batch Loss = 1.120969, Accurac
y = 0.755859375
PERFORMANCE ON TEST SET:          Batch Loss = 1.128003716468811, Accur
acy = 0.7489132285118103
Iter #1822720: Learning rate = 0.002398: Batch Loss = 1.085106, Accurac
y = 0.755859375
PERFORMANCE ON TEST SET:          Batch Loss = 1.1459003686904907, Accu
racy = 0.7442184090614319
Iter #1826816: Learning rate = 0.002398: Batch Loss = 1.044838, Accurac
y = 0.765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.0701990127563477, Accu
racy = 0.7570857405662537
Iter #1830912: Learning rate = 0.002398: Batch Loss = 1.076207, Accurac
y = 0.74609375
PERFORMANCE ON TEST SET:          Batch Loss = 1.086926817893982, Accur
acy = 0.756216287612915
Iter #1835008: Learning rate = 0.002398: Batch Loss = 1.082881, Accurac
y = 0.7421875
PERFORMANCE ON TEST SET:          Batch Loss = 1.1363487243652344, Accu
racy = 0.7419579029083252
Iter #1839104: Learning rate = 0.002398: Batch Loss = 1.039790, Accurac
y = 0.765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.0892529487609863, Accu
racy = 0.7461311221122742
Iter #1843200: Learning rate = 0.002398: Batch Loss = 1.039903, Accurac
y = 0.751953125
PERFORMANCE ON TEST SET:          Batch Loss = 1.101104497909546, Accur
acy = 0.7492610216140747
Iter #1847296: Learning rate = 0.002398: Batch Loss = 1.070918, Accurac
y = 0.73828125
PERFORMANCE ON TEST SET:          Batch Loss = 1.1120136976242065, Accu
racy = 0.7410885095596313
Iter #1851392: Learning rate = 0.002398: Batch Loss = 1.071955, Accurac
y = 0.767578125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0852686166763306, Accu
racy = 0.7544775009155273
Iter #1855488: Learning rate = 0.002398: Batch Loss = 1.001025, Accurac
y = 0.783203125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0680670738220215, Accu
racy = 0.7593461871147156
Iter #1859584: Learning rate = 0.002398: Batch Loss = 1.057543, Accurac
y = 0.7734375
PERFORMANCE ON TEST SET:          Batch Loss = 1.1154470443725586, Accu
racy = 0.7330899238586426
Iter #1863680: Learning rate = 0.002398: Batch Loss = 1.101016, Accurac
y = 0.744140625
PERFORMANCE ON TEST SET:          Batch Loss = 1.119731068611145, Accur
acy = 0.7396974563598633
Iter #1867776: Learning rate = 0.002398: Batch Loss = 1.016454, Accurac
y = 0.796875
PERFORMANCE ON TEST SET:          Batch Loss = 1.0852744579315186, Accu
racy = 0.7525647878646851
Iter #1871872: Learning rate = 0.002398: Batch Loss = 1.098576, Accurac
y = 0.740234375
```

PERFORMANCE ON TEST SET: Batch Loss = 1.1819844245910645, Accuracy = 0.7028343081474304  
Iter #1875968: Learning rate = 0.002398: Batch Loss = 1.083872, Accuracy = 0.732421875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0951924324035645, Accuracy = 0.7576074004173279  
Iter #1880064: Learning rate = 0.002398: Batch Loss = 1.054193, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.1320359706878662, Accuracy = 0.7536080479621887  
Iter #1884160: Learning rate = 0.002398: Batch Loss = 1.066842, Accuracy = 0.751953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0655856132507324, Accuracy = 0.7543035745620728  
Iter #1888256: Learning rate = 0.002398: Batch Loss = 1.063734, Accuracy = 0.76171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.062270164489746, Accuracy = 0.7546513676643372  
Iter #1892352: Learning rate = 0.002398: Batch Loss = 1.204171, Accuracy = 0.720703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1487338542938232, Accuracy = 0.7456094622612  
Iter #1896448: Learning rate = 0.002398: Batch Loss = 1.005101, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.09401273727417, Accuracy = 0.7543035745620728  
Iter #1900544: Learning rate = 0.002302: Batch Loss = 1.108179, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0796806812286377, Accuracy = 0.7546513676643372  
Iter #1904640: Learning rate = 0.002302: Batch Loss = 1.019745, Accuracy = 0.775390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0686216354370117, Accuracy = 0.75969398021698  
Iter #1908736: Learning rate = 0.002302: Batch Loss = 1.031820, Accuracy = 0.78125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0527982711791992, Accuracy = 0.7638671398162842  
Iter #1912832: Learning rate = 0.002302: Batch Loss = 1.007799, Accuracy = 0.759765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0619370937347412, Accuracy = 0.7683880925178528  
Iter #1916928: Learning rate = 0.002302: Batch Loss = 1.026513, Accuracy = 0.751953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0373209714889526, Accuracy = 0.747696042060852  
Iter #1921024: Learning rate = 0.002302: Batch Loss = 1.031970, Accuracy = 0.7578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0601801872253418, Accuracy = 0.7612589001655579  
Iter #1925120: Learning rate = 0.002302: Batch Loss = 1.001532, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0350052118301392, Accuracy = 0.7602156400680542  
Iter #1929216: Learning rate = 0.002302: Batch Loss = 1.001947, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0224723815917969, Accuracy = 0.7643887996673584  
Iter #1933312: Learning rate = 0.002302: Batch Loss = 1.001350, Accuracy = 0.791015625  
PERFORMANCE ON TEST SET: Batch Loss = 1.023048758506775, Accuracy =

```
acy = 0.7683880925178528
Iter #1937408: Learning rate = 0.002302: Batch Loss = 0.963398, Accuracy = 0.7890625
PERFORMANCE ON TEST SET: Batch Loss = 1.0317504405975342, Accuracy = 0.7623022198677063
Iter #1941504: Learning rate = 0.002302: Batch Loss = 0.928064, Accuracy = 0.8046875
PERFORMANCE ON TEST SET: Batch Loss = 1.0866937637329102, Accuracy = 0.7334376573562622
Iter #1945600: Learning rate = 0.002302: Batch Loss = 1.024252, Accuracy = 0.765625
PERFORMANCE ON TEST SET: Batch Loss = 1.0624396800994873, Accuracy = 0.7216136455535889
Iter #1949696: Learning rate = 0.002302: Batch Loss = 0.919386, Accuracy = 0.80859375
PERFORMANCE ON TEST SET: Batch Loss = 1.0763341188430786, Accuracy = 0.75969398021698
Iter #1953792: Learning rate = 0.002302: Batch Loss = 0.981048, Accuracy = 0.79296875
PERFORMANCE ON TEST SET: Batch Loss = 1.0465604066848755, Accuracy = 0.76334547996521
Iter #1957888: Learning rate = 0.002302: Batch Loss = 0.958480, Accuracy = 0.8046875
PERFORMANCE ON TEST SET: Batch Loss = 1.0269536972045898, Accuracy = 0.7690836191177368
Iter #1961984: Learning rate = 0.002302: Batch Loss = 0.960933, Accuracy = 0.798828125
PERFORMANCE ON TEST SET: Batch Loss = 1.0482852458953857, Accuracy = 0.7499565482139587
Iter #1966080: Learning rate = 0.002302: Batch Loss = 0.927330, Accuracy = 0.818359375
PERFORMANCE ON TEST SET: Batch Loss = 1.0445375442504883, Accuracy = 0.7536080479621887
Iter #1970176: Learning rate = 0.002302: Batch Loss = 0.956164, Accuracy = 0.8046875
PERFORMANCE ON TEST SET: Batch Loss = 1.0590386390686035, Accuracy = 0.7400451898574829
Iter #1974272: Learning rate = 0.002302: Batch Loss = 0.972103, Accuracy = 0.771484375
PERFORMANCE ON TEST SET: Batch Loss = 1.0190339088439941, Accuracy = 0.7736045718193054
Iter #1978368: Learning rate = 0.002302: Batch Loss = 0.884351, Accuracy = 0.83984375
PERFORMANCE ON TEST SET: Batch Loss = 0.9987333416938782, Accuracy = 0.7788210511207581
Iter #1982464: Learning rate = 0.002302: Batch Loss = 0.964947, Accuracy = 0.791015625
PERFORMANCE ON TEST SET: Batch Loss = 0.997748851776123, Accuracy = 0.7751695513725281
Iter #1986560: Learning rate = 0.002302: Batch Loss = 0.963721, Accuracy = 0.791015625
PERFORMANCE ON TEST SET: Batch Loss = 1.014538049697876, Accuracy = 0.7508259415626526
Iter #1990656: Learning rate = 0.002302: Batch Loss = 1.004386, Accuracy = 0.76171875
PERFORMANCE ON TEST SET: Batch Loss = 1.0092856884002686, Accuracy = 0.7501304149627686
Iter #1994752: Learning rate = 0.002302: Batch Loss = 0.974055, Accuracy = 0.76953125
PERFORMANCE ON TEST SET: Batch Loss = 1.000925064086914, Accuracy = 0.7732568383216858
```

Iter #1998848: Learning rate = 0.002302: Batch Loss = 1.000264, Accuracy = 0.767578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0283187627792358, Accuracy = 0.7572596073150635  
Iter #2002944: Learning rate = 0.002210: Batch Loss = 0.973037, Accuracy = 0.783203125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0135406255722046, Accuracy = 0.7485654950141907  
Iter #2007040: Learning rate = 0.002210: Batch Loss = 0.990888, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0437569618225098, Accuracy = 0.7565640807151794  
Iter #2011136: Learning rate = 0.002210: Batch Loss = 1.026631, Accuracy = 0.783203125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0918889045715332, Accuracy = 0.7593461871147156  
Iter #2015232: Learning rate = 0.002210: Batch Loss = 1.005755, Accuracy = 0.767578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0359697341918945, Accuracy = 0.7652581930160522  
Iter #2019328: Learning rate = 0.002210: Batch Loss = 0.926965, Accuracy = 0.80859375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0463606119155884, Accuracy = 0.754825234413147  
Iter #2023424: Learning rate = 0.002210: Batch Loss = 0.984875, Accuracy = 0.767578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.048729658126831, Accuracy = 0.7426534295082092  
Iter #2027520: Learning rate = 0.002210: Batch Loss = 0.941919, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9894427061080933, Accuracy = 0.7826464772224426  
Iter #2031616: Learning rate = 0.002210: Batch Loss = 1.011278, Accuracy = 0.748046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9961905479431152, Accuracy = 0.7471743822097778  
Iter #2035712: Learning rate = 0.002210: Batch Loss = 0.982830, Accuracy = 0.78515625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9970383644104004, Accuracy = 0.7703008055686951  
Iter #2039808: Learning rate = 0.002210: Batch Loss = 1.047994, Accuracy = 0.744140625  
PERFORMANCE ON TEST SET: Batch Loss = 1.1281318664550781, Accuracy = 0.7264823317527771  
Iter #2043904: Learning rate = 0.002210: Batch Loss = 1.049932, Accuracy = 0.7578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0017271041870117, Accuracy = 0.7793427109718323  
Iter #2048000: Learning rate = 0.002210: Batch Loss = 1.068969, Accuracy = 0.75390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0178475379943848, Accuracy = 0.7623022198677063  
Iter #2052096: Learning rate = 0.002210: Batch Loss = 0.968532, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0511412620544434, Accuracy = 0.7703008055686951  
Iter #2056192: Learning rate = 0.002210: Batch Loss = 0.943798, Accuracy = 0.7890625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0545878410339355, Accuracy = 0.7532603144645691  
Iter #2060288: Learning rate = 0.002210: Batch Loss = 0.971445, Accuracy =

```
y = 0.79296875
PERFORMANCE ON TEST SET:          Batch Loss = 1.0304360389709473, Accu
racy = 0.7715179920196533
Iter #2064384: Learning rate = 0.002210: Batch Loss = 0.977505, Accurac
y = 0.79296875
PERFORMANCE ON TEST SET:          Batch Loss = 1.0180691480636597, Accu
racy = 0.7687358856201172
Iter #2068480: Learning rate = 0.002210: Batch Loss = 1.006278, Accurac
y = 0.76953125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9955016374588013, Accu
racy = 0.7676925659179688
Iter #2072576: Learning rate = 0.002210: Batch Loss = 0.954452, Accurac
y = 0.7890625
PERFORMANCE ON TEST SET:          Batch Loss = 1.021625280380249, Accur
acy = 0.7706485986709595
Iter #2076672: Learning rate = 0.002210: Batch Loss = 0.959162, Accurac
y = 0.7890625
PERFORMANCE ON TEST SET:          Batch Loss = 1.1162168979644775, Accu
racy = 0.7350026369094849
Iter #2080768: Learning rate = 0.002210: Batch Loss = 1.038103, Accurac
y = 0.755859375
PERFORMANCE ON TEST SET:          Batch Loss = 1.034006118774414, Accur
acy = 0.7623022198677063
Iter #2084864: Learning rate = 0.002210: Batch Loss = 0.961444, Accurac
y = 0.78515625
PERFORMANCE ON TEST SET:          Batch Loss = 1.077413558959961, Accur
acy = 0.7287428379058838
Iter #2088960: Learning rate = 0.002210: Batch Loss = 0.958494, Accurac
y = 0.787109375
PERFORMANCE ON TEST SET:          Batch Loss = 1.025784969329834, Accur
acy = 0.77742999792099
Iter #2093056: Learning rate = 0.002210: Batch Loss = 0.900897, Accurac
y = 0.794921875
PERFORMANCE ON TEST SET:          Batch Loss = 1.0090522766113281, Accu
racy = 0.7657798528671265
Iter #2097152: Learning rate = 0.002210: Batch Loss = 0.974839, Accurac
y = 0.783203125
PERFORMANCE ON TEST SET:          Batch Loss = 1.0482349395751953, Accu
racy = 0.7654321193695068
Iter #2101248: Learning rate = 0.002122: Batch Loss = 0.945166, Accurac
y = 0.787109375
PERFORMANCE ON TEST SET:          Batch Loss = 1.015492558479309, Accur
acy = 0.747696042060852
Iter #2105344: Learning rate = 0.002122: Batch Loss = 0.979382, Accurac
y = 0.765625
PERFORMANCE ON TEST SET:          Batch Loss = 1.0508365631103516, Accu
racy = 0.7483915686607361
Iter #2109440: Learning rate = 0.002122: Batch Loss = 0.951770, Accurac
y = 0.77734375
PERFORMANCE ON TEST SET:          Batch Loss = 1.0185986757278442, Accu
racy = 0.7520431280136108
Iter #2113536: Learning rate = 0.002122: Batch Loss = 0.942012, Accurac
y = 0.791015625
PERFORMANCE ON TEST SET:          Batch Loss = 1.0178945064544678, Accu
racy = 0.7758650779724121
Iter #2117632: Learning rate = 0.002122: Batch Loss = 0.931853, Accurac
y = 0.79296875
PERFORMANCE ON TEST SET:          Batch Loss = 1.0340033769607544, Accu
racy = 0.7722135186195374
Iter #2121728: Learning rate = 0.002122: Batch Loss = 0.947470, Accurac
y = 0.765625
```

PERFORMANCE ON TEST SET: Batch Loss = 0.9888512492179871, Accuracy = 0.7546513676643372  
Iter #2125824: Learning rate = 0.002122: Batch Loss = 1.046025, Accuracy = 0.7578125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0450273752212524, Accuracy = 0.7723873853683472  
Iter #2129920: Learning rate = 0.002122: Batch Loss = 0.974577, Accuracy = 0.775390625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0137276649475098, Accuracy = 0.7663015127182007  
Iter #2134016: Learning rate = 0.002122: Batch Loss = 0.918893, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.028969645500183, Accuracy = 0.7482177019119263  
Iter #2138112: Learning rate = 0.002122: Batch Loss = 0.993924, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9956344366073608, Accuracy = 0.7763867378234863  
Iter #2142208: Learning rate = 0.002122: Batch Loss = 0.976834, Accuracy = 0.771484375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9963197708129883, Accuracy = 0.7609111666679382  
Iter #2146304: Learning rate = 0.002122: Batch Loss = 1.022440, Accuracy = 0.759765625  
PERFORMANCE ON TEST SET: Batch Loss = 1.077785611152649, Accuracy = 0.7461311221122742  
Iter #2150400: Learning rate = 0.002122: Batch Loss = 1.018135, Accuracy = 0.76171875  
PERFORMANCE ON TEST SET: Batch Loss = 1.1057053804397583, Accuracy = 0.733611524105072  
Iter #2154496: Learning rate = 0.002122: Batch Loss = 0.936616, Accuracy = 0.796875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0274403095245361, Accuracy = 0.746304988861084  
Iter #2158592: Learning rate = 0.002122: Batch Loss = 1.005494, Accuracy = 0.763671875  
PERFORMANCE ON TEST SET: Batch Loss = 1.03566312789917, Accuracy = 0.7478699088096619  
Iter #2162688: Learning rate = 0.002122: Batch Loss = 0.981519, Accuracy = 0.779296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9871788620948792, Accuracy = 0.7819509506225586  
Iter #2166784: Learning rate = 0.002122: Batch Loss = 1.012414, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9877625107765198, Accuracy = 0.773082971572876  
Iter #2170880: Learning rate = 0.002122: Batch Loss = 1.053598, Accuracy = 0.72265625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0121536254882812, Accuracy = 0.7673448324203491  
Iter #2174976: Learning rate = 0.002122: Batch Loss = 0.974429, Accuracy = 0.76953125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0765548944473267, Accuracy = 0.7551730275154114  
Iter #2179072: Learning rate = 0.002122: Batch Loss = 0.965828, Accuracy = 0.763671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9925293922424316, Accuracy = 0.7668231725692749  
Iter #2183168: Learning rate = 0.002122: Batch Loss = 0.970210, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 1.0121475458145142, Accuracy =

```
racy = 0.76334547996521
Iter #2187264: Learning rate = 0.002122: Batch Loss = 0.986086, Accuracy = 0.7578125
PERFORMANCE ON TEST SET: Batch Loss = 1.0032482147216797, Accuracy = 0.7739523649215698
Iter #2191360: Learning rate = 0.002122: Batch Loss = 0.907663, Accuracy = 0.81640625
PERFORMANCE ON TEST SET: Batch Loss = 1.0080909729003906, Accuracy = 0.774474024772644
Iter #2195456: Learning rate = 0.002122: Batch Loss = 0.917918, Accuracy = 0.796875
PERFORMANCE ON TEST SET: Batch Loss = 0.9971964359283447, Accuracy = 0.7833420038223267
Iter #2199552: Learning rate = 0.002122: Batch Loss = 0.987444, Accuracy = 0.775390625
PERFORMANCE ON TEST SET: Batch Loss = 0.9875388145446777, Accuracy = 0.7723873853683472
Iter #2203648: Learning rate = 0.002037: Batch Loss = 0.938364, Accuracy = 0.787109375
PERFORMANCE ON TEST SET: Batch Loss = 0.9907670021057129, Accuracy = 0.7678664326667786
Iter #2207744: Learning rate = 0.002037: Batch Loss = 0.937403, Accuracy = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 0.9733511805534363, Accuracy = 0.773082971572876
Iter #2211840: Learning rate = 0.002037: Batch Loss = 0.965919, Accuracy = 0.76953125
PERFORMANCE ON TEST SET: Batch Loss = 0.9606539011001587, Accuracy = 0.7840375304222107
Iter #2215936: Learning rate = 0.002037: Batch Loss = 0.937528, Accuracy = 0.810546875
PERFORMANCE ON TEST SET: Batch Loss = 1.0493288040161133, Accuracy = 0.7623022198677063
Iter #2220032: Learning rate = 0.002037: Batch Loss = 0.931129, Accuracy = 0.80078125
PERFORMANCE ON TEST SET: Batch Loss = 1.0551106929779053, Accuracy = 0.7483915686607361
Iter #2224128: Learning rate = 0.002037: Batch Loss = 1.014255, Accuracy = 0.767578125
PERFORMANCE ON TEST SET: Batch Loss = 1.0259565114974976, Accuracy = 0.7649104595184326
Iter #2228224: Learning rate = 0.002037: Batch Loss = 0.967787, Accuracy = 0.779296875
PERFORMANCE ON TEST SET: Batch Loss = 1.045028805732727, Accuracy = 0.7449139356613159
Iter #2232320: Learning rate = 0.002037: Batch Loss = 0.956393, Accuracy = 0.78515625
PERFORMANCE ON TEST SET: Batch Loss = 1.003172755241394, Accuracy = 0.7706485986709595
Iter #2236416: Learning rate = 0.002037: Batch Loss = 0.925455, Accuracy = 0.775390625
PERFORMANCE ON TEST SET: Batch Loss = 0.9952754974365234, Accuracy = 0.7699530720710754
Iter #2240512: Learning rate = 0.002037: Batch Loss = 1.056256, Accuracy = 0.75
PERFORMANCE ON TEST SET: Batch Loss = 1.102189540863037, Accuracy = 0.7546513676643372
Iter #2244608: Learning rate = 0.002037: Batch Loss = 0.968221, Accuracy = 0.76953125
PERFORMANCE ON TEST SET: Batch Loss = 1.0157208442687988, Accuracy = 0.7541297078132629
```



Iter #2248704: Learning rate = 0.002037: Batch Loss = 0.939826, Accuracy = 0.791015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9877668619155884, Accuracy = 0.7715179920196533  
Iter #2252800: Learning rate = 0.002037: Batch Loss = 0.907282, Accuracy = 0.791015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9757534861564636, Accuracy = 0.7605633735656738  
Iter #2256896: Learning rate = 0.002037: Batch Loss = 0.925465, Accuracy = 0.814453125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0063116550445557, Accuracy = 0.7584767937660217  
Iter #2260992: Learning rate = 0.002037: Batch Loss = 0.931171, Accuracy = 0.7890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9761041402816772, Accuracy = 0.7796905040740967  
Iter #2265088: Learning rate = 0.002037: Batch Loss = 0.915680, Accuracy = 0.80078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.975098729133606, Accuracy = 0.7715179920196533  
Iter #2269184: Learning rate = 0.002037: Batch Loss = 0.914232, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9902149438858032, Accuracy = 0.7765606045722961  
Iter #2273280: Learning rate = 0.002037: Batch Loss = 0.933486, Accuracy = 0.7890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9947229623794556, Accuracy = 0.7443922758102417  
Iter #2277376: Learning rate = 0.002037: Batch Loss = 0.973277, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9648227095603943, Accuracy = 0.782994270324707  
Iter #2281472: Learning rate = 0.002037: Batch Loss = 0.954866, Accuracy = 0.77734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9632856249809265, Accuracy = 0.7800382375717163  
Iter #2285568: Learning rate = 0.002037: Batch Loss = 0.929365, Accuracy = 0.78125  
PERFORMANCE ON TEST SET: Batch Loss = 0.9971973896026611, Accuracy = 0.7513476014137268  
Iter #2289664: Learning rate = 0.002037: Batch Loss = 0.942944, Accuracy = 0.7890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9862554669380188, Accuracy = 0.7628238797187805  
Iter #2293760: Learning rate = 0.002037: Batch Loss = 0.850651, Accuracy = 0.8046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9996663331985474, Accuracy = 0.7607372403144836  
Iter #2297856: Learning rate = 0.002037: Batch Loss = 1.001151, Accuracy = 0.767578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.9806104302406311, Accuracy = 0.7765606045722961  
Iter #2301952: Learning rate = 0.001955: Batch Loss = 0.887576, Accuracy = 0.828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.9820981025695801, Accuracy = 0.7685620188713074  
Iter #2306048: Learning rate = 0.001955: Batch Loss = 0.967450, Accuracy = 0.775390625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9810292720794678, Accuracy = 0.7749956250190735  
Iter #2310144: Learning rate = 0.001955: Batch Loss = 0.914782, Accuracy =

```
y = 0.798828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9925390481948853, Accu
racy = 0.7716918587684631
Iter #2314240: Learning rate = 0.001955: Batch Loss = 0.981508, Accurac
y = 0.7578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9802835583686829, Accu
racy = 0.747696042060852
Iter #2318336: Learning rate = 0.001955: Batch Loss = 0.880130, Accurac
y = 0.830078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9523251056671143, Accu
racy = 0.7819509506225586
Iter #2322432: Learning rate = 0.001955: Batch Loss = 0.890260, Accurac
y = 0.818359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.9778720736503601, Accu
racy = 0.7584767937660217
Iter #2326528: Learning rate = 0.001955: Batch Loss = 0.950215, Accurac
y = 0.798828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9842774868011475, Accu
racy = 0.7619544267654419
Iter #2330624: Learning rate = 0.001955: Batch Loss = 0.936448, Accurac
y = 0.7890625
PERFORMANCE ON TEST SET:          Batch Loss = 0.9676327705383301, Accu
racy = 0.7629977464675903
Iter #2334720: Learning rate = 0.001955: Batch Loss = 0.910583, Accurac
y = 0.794921875
PERFORMANCE ON TEST SET:          Batch Loss = 1.012549877166748, Accur
acy = 0.7709963321685791
Iter #2338816: Learning rate = 0.001955: Batch Loss = 0.876138, Accurac
y = 0.822265625
PERFORMANCE ON TEST SET:          Batch Loss = 0.9851580858230591, Accu
racy = 0.7729090452194214
Iter #2342912: Learning rate = 0.001955: Batch Loss = 0.972950, Accurac
y = 0.771484375
PERFORMANCE ON TEST SET:          Batch Loss = 0.9993798732757568, Accu
racy = 0.7708224654197693
Iter #2347008: Learning rate = 0.001955: Batch Loss = 0.944065, Accurac
y = 0.775390625
PERFORMANCE ON TEST SET:          Batch Loss = 1.0347352027893066, Accu
racy = 0.7490870952606201
Iter #2351104: Learning rate = 0.001955: Batch Loss = 0.974027, Accurac
y = 0.76171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.9999964833259583, Accu
racy = 0.76334547996521
Iter #2355200: Learning rate = 0.001955: Batch Loss = 0.902958, Accurac
y = 0.794921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.9532148241996765, Accu
racy = 0.7784733176231384
Iter #2359296: Learning rate = 0.001955: Batch Loss = 0.971758, Accurac
y = 0.77734375
PERFORMANCE ON TEST SET:          Batch Loss = 1.0003399848937988, Accu
racy = 0.774474024772644
Iter #2363392: Learning rate = 0.001955: Batch Loss = 0.914678, Accurac
y = 0.78125
PERFORMANCE ON TEST SET:          Batch Loss = 0.96930330991745, Accura
cy = 0.7711702585220337
Iter #2367488: Learning rate = 0.001955: Batch Loss = 0.913509, Accurac
y = 0.7734375
PERFORMANCE ON TEST SET:          Batch Loss = 0.9734935760498047, Accu
racy = 0.7544775009155273
Iter #2371584: Learning rate = 0.001955: Batch Loss = 0.949834, Accurac
y = 0.78515625
```

PERFORMANCE ON TEST SET: Batch Loss = 0.9881112575531006, Accuracy = 0.7729090452194214  
Iter #2375680: Learning rate = 0.001955: Batch Loss = 0.883131, Accuracy = 0.796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9603437185287476, Accuracy = 0.7732568383216858  
Iter #2379776: Learning rate = 0.001955: Batch Loss = 0.909723, Accuracy = 0.79296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9815105199813843, Accuracy = 0.7765606045722961  
Iter #2383872: Learning rate = 0.001955: Batch Loss = 0.849972, Accuracy = 0.826171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.972668468952179, Accuracy = 0.7777777910232544  
Iter #2387968: Learning rate = 0.001955: Batch Loss = 0.901400, Accuracy = 0.8046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9781492948532104, Accuracy = 0.7729090452194214  
Iter #2392064: Learning rate = 0.001955: Batch Loss = 0.909856, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9773904085159302, Accuracy = 0.7739523649215698  
Iter #2396160: Learning rate = 0.001955: Batch Loss = 0.889710, Accuracy = 0.794921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9799371957778931, Accuracy = 0.7812554240226746  
Iter #2400256: Learning rate = 0.001877: Batch Loss = 0.909652, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9715712070465088, Accuracy = 0.7796905040740967  
Iter #2404352: Learning rate = 0.001877: Batch Loss = 0.932570, Accuracy = 0.80859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9794715642929077, Accuracy = 0.7720396518707275  
Iter #2408448: Learning rate = 0.001877: Batch Loss = 0.932275, Accuracy = 0.779296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9587781429290771, Accuracy = 0.7814292907714844  
Iter #2412544: Learning rate = 0.001877: Batch Loss = 0.838300, Accuracy = 0.806640625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0043649673461914, Accuracy = 0.7708224654197693  
Iter #2416640: Learning rate = 0.001877: Batch Loss = 0.913777, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9584262371063232, Accuracy = 0.7798643708229065  
Iter #2420736: Learning rate = 0.001877: Batch Loss = 0.935351, Accuracy = 0.78515625  
PERFORMANCE ON TEST SET: Batch Loss = 0.957136869430542, Accuracy = 0.7810815572738647  
Iter #2424832: Learning rate = 0.001877: Batch Loss = 0.905191, Accuracy = 0.7734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9625738859176636, Accuracy = 0.7854286432266235  
Iter #2428928: Learning rate = 0.001877: Batch Loss = 0.979895, Accuracy = 0.755859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9645591974258423, Accuracy = 0.7570857405662537  
Iter #2433024: Learning rate = 0.001877: Batch Loss = 0.895255, Accuracy = 0.79296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9692785739898682, Accuracy = 0.79296875

```
racy = 0.7758650779724121
Iter #2437120: Learning rate = 0.001877: Batch Loss = 0.908655, Accurac
y = 0.80078125
PERFORMANCE ON TEST SET: Batch Loss = 0.9815523624420166, Accu
racy = 0.7614327669143677
Iter #2441216: Learning rate = 0.001877: Batch Loss = 0.907403, Accurac
y = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 0.9521104097366333, Accu
racy = 0.7786471843719482
Iter #2445312: Learning rate = 0.001877: Batch Loss = 0.907049, Accurac
y = 0.806640625
PERFORMANCE ON TEST SET: Batch Loss = 0.977770209312439, Accur
acy = 0.7777777910232544
Iter #2449408: Learning rate = 0.001877: Batch Loss = 0.896258, Accurac
y = 0.78515625
PERFORMANCE ON TEST SET: Batch Loss = 0.978635847568512, Accur
acy = 0.77377849817276
Iter #2453504: Learning rate = 0.001877: Batch Loss = 0.912642, Accurac
y = 0.8046875
PERFORMANCE ON TEST SET: Batch Loss = 0.9845306873321533, Accu
racy = 0.7796905040740967
Iter #2457600: Learning rate = 0.001877: Batch Loss = 0.960504, Accurac
y = 0.7734375
PERFORMANCE ON TEST SET: Batch Loss = 0.9736341834068298, Accu
racy = 0.7720396518707275
Iter #2461696: Learning rate = 0.001877: Batch Loss = 0.935981, Accurac
y = 0.783203125
PERFORMANCE ON TEST SET: Batch Loss = 0.9641077518463135, Accu
racy = 0.7849069833755493
Iter #2465792: Learning rate = 0.001877: Batch Loss = 0.903369, Accurac
y = 0.79296875
PERFORMANCE ON TEST SET: Batch Loss = 0.9833476543426514, Accu
racy = 0.7758650779724121
Iter #2469888: Learning rate = 0.001877: Batch Loss = 0.991417, Accurac
y = 0.75
PERFORMANCE ON TEST SET: Batch Loss = 1.0793087482452393, Accu
racy = 0.7181359529495239
Iter #2473984: Learning rate = 0.001877: Batch Loss = 0.979665, Accurac
y = 0.775390625
PERFORMANCE ON TEST SET: Batch Loss = 1.036872386932373, Accur
acy = 0.76334547996521
Iter #2478080: Learning rate = 0.001877: Batch Loss = 0.962062, Accurac
y = 0.75390625
PERFORMANCE ON TEST SET: Batch Loss = 0.9698967337608337, Accu
racy = 0.7661276459693909
Iter #2482176: Learning rate = 0.001877: Batch Loss = 0.907971, Accurac
y = 0.78515625
PERFORMANCE ON TEST SET: Batch Loss = 0.9616332650184631, Accu
racy = 0.773082971572876
Iter #2486272: Learning rate = 0.001877: Batch Loss = 0.909697, Accurac
y = 0.798828125
PERFORMANCE ON TEST SET: Batch Loss = 0.9638713002204895, Accu
racy = 0.7609111666679382
Iter #2490368: Learning rate = 0.001877: Batch Loss = 0.885551, Accurac
y = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 0.9811505079269409, Accu
racy = 0.7782994508743286
Iter #2494464: Learning rate = 0.001877: Batch Loss = 0.871301, Accurac
y = 0.802734375
PERFORMANCE ON TEST SET: Batch Loss = 1.000397801399231, Accur
acy = 0.7683880925178528
```

Iter #2498560: Learning rate = 0.001877: Batch Loss = 0.968552, Accuracy = 0.765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9906219840049744, Accuracy = 0.7574334740638733  
Iter #2502656: Learning rate = 0.001802: Batch Loss = 0.871149, Accuracy = 0.80078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.9696425199508667, Accuracy = 0.7569118142127991  
Iter #2506752: Learning rate = 0.001802: Batch Loss = 0.994823, Accuracy = 0.751953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.9508850574493408, Accuracy = 0.7788210511207581  
Iter #2510848: Learning rate = 0.001802: Batch Loss = 0.874952, Accuracy = 0.80859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9781609773635864, Accuracy = 0.769605278968811  
Iter #2514944: Learning rate = 0.001802: Batch Loss = 0.852007, Accuracy = 0.826171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9693976640701294, Accuracy = 0.7798643708229065  
Iter #2519040: Learning rate = 0.001802: Batch Loss = 0.895773, Accuracy = 0.794921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9647326469421387, Accuracy = 0.7718657851219177  
Iter #2523136: Learning rate = 0.001802: Batch Loss = 0.875610, Accuracy = 0.826171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9535009860992432, Accuracy = 0.7782994508743286  
Iter #2527232: Learning rate = 0.001802: Batch Loss = 0.956226, Accuracy = 0.7578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.937940239906311, Accuracy = 0.7871674299240112  
Iter #2531328: Learning rate = 0.001802: Batch Loss = 0.881930, Accuracy = 0.8046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9421074986457825, Accuracy = 0.7835159301757812  
Iter #2535424: Learning rate = 0.001802: Batch Loss = 1.077370, Accuracy = 0.732421875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0800448656082153, Accuracy = 0.7527386546134949  
Iter #2539520: Learning rate = 0.001802: Batch Loss = 0.911880, Accuracy = 0.7890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.9547363519668579, Accuracy = 0.7619544267654419  
Iter #2543616: Learning rate = 0.001802: Batch Loss = 0.933781, Accuracy = 0.798828125  
PERFORMANCE ON TEST SET: Batch Loss = 1.0478134155273438, Accuracy = 0.7438706159591675  
Iter #2547712: Learning rate = 0.001802: Batch Loss = 1.263568, Accuracy = 0.681640625  
PERFORMANCE ON TEST SET: Batch Loss = 1.0665887594223022, Accuracy = 0.7543035745620728  
Iter #2551808: Learning rate = 0.001802: Batch Loss = 0.870874, Accuracy = 0.8046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9980449676513672, Accuracy = 0.7499565482139587  
Iter #2555904: Learning rate = 0.001802: Batch Loss = 0.900509, Accuracy = 0.802734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9492555856704712, Accuracy = 0.7793427109718323  
Iter #2560000: Learning rate = 0.001802: Batch Loss = 0.842908, Accuracy =

```
y = 0.8359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.9587193727493286, Accu
racy = 0.7803860306739807
Iter #2564096: Learning rate = 0.001802:  Batch Loss = 0.909572, Accurac
y = 0.775390625
PERFORMANCE ON TEST SET:          Batch Loss = 0.9559444785118103, Accu
racy = 0.7798643708229065
Iter #2568192: Learning rate = 0.001802:  Batch Loss = 0.916295, Accurac
y = 0.783203125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9429531097412109, Accu
racy = 0.7711702585220337
Iter #2572288: Learning rate = 0.001802:  Batch Loss = 0.954699, Accurac
y = 0.763671875
PERFORMANCE ON TEST SET:          Batch Loss = 0.9701017141342163, Accu
racy = 0.7795165777206421
Iter #2576384: Learning rate = 0.001802:  Batch Loss = 0.916667, Accurac
y = 0.775390625
PERFORMANCE ON TEST SET:          Batch Loss = 0.9444547891616821, Accu
racy = 0.7645626664161682
Iter #2580480: Learning rate = 0.001802:  Batch Loss = 0.921111, Accurac
y = 0.78125
PERFORMANCE ON TEST SET:          Batch Loss = 0.943974494934082, Accur
acy = 0.76334547996521
Iter #2584576: Learning rate = 0.001802:  Batch Loss = 0.891846, Accurac
y = 0.78125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9482229948043823, Accu
racy = 0.7810815572738647
Iter #2588672: Learning rate = 0.001802:  Batch Loss = 0.888904, Accurac
y = 0.810546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.9546190500259399, Accu
racy = 0.7856025099754333
Iter #2592768: Learning rate = 0.001802:  Batch Loss = 0.889956, Accurac
y = 0.791015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.9343320727348328, Accu
racy = 0.7845591902732849
Iter #2596864: Learning rate = 0.001802:  Batch Loss = 0.891290, Accurac
y = 0.794921875
PERFORMANCE ON TEST SET:          Batch Loss = 1.1295678615570068, Accu
racy = 0.7318727374076843
Iter #2600960: Learning rate = 0.001730:  Batch Loss = 0.904026, Accurac
y = 0.779296875
PERFORMANCE ON TEST SET:          Batch Loss = 0.9664934873580933, Accu
racy = 0.7442184090614319
Iter #2605056: Learning rate = 0.001730:  Batch Loss = 0.866885, Accurac
y = 0.828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9530532360076904, Accu
racy = 0.7746478915214539
Iter #2609152: Learning rate = 0.001730:  Batch Loss = 0.884870, Accurac
y = 0.798828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.9407984018325806, Accu
racy = 0.77377849817276
Iter #2613248: Learning rate = 0.001730:  Batch Loss = 0.949248, Accurac
y = 0.775390625
PERFORMANCE ON TEST SET:          Batch Loss = 0.9415466785430908, Accu
racy = 0.7849069833755493
Iter #2617344: Learning rate = 0.001730:  Batch Loss = 0.906347, Accurac
y = 0.779296875
PERFORMANCE ON TEST SET:          Batch Loss = 0.9152872562408447, Accu
racy = 0.7809076905250549
Iter #2621440: Learning rate = 0.001730:  Batch Loss = 0.858598, Accurac
y = 0.80078125
```

PERFORMANCE ON TEST SET: Batch Loss = 0.9369837045669556, Accuracy = 0.7878629565238953  
Iter #2625536: Learning rate = 0.001730: Batch Loss = 0.875881, Accuracy = 0.830078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.9564520120620728, Accuracy = 0.7699530720710754  
Iter #2629632: Learning rate = 0.001730: Batch Loss = 0.823438, Accuracy = 0.8203125  
PERFORMANCE ON TEST SET: Batch Loss = 0.8802493810653687, Accuracy = 0.8002086877822876  
Iter #2633728: Learning rate = 0.001730: Batch Loss = 0.903128, Accuracy = 0.787109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9456185102462769, Accuracy = 0.75969398021698  
Iter #2637824: Learning rate = 0.001730: Batch Loss = 0.821291, Accuracy = 0.82421875  
PERFORMANCE ON TEST SET: Batch Loss = 0.8861021399497986, Accuracy = 0.7845591902732849  
Iter #2641920: Learning rate = 0.001730: Batch Loss = 0.841907, Accuracy = 0.82421875  
PERFORMANCE ON TEST SET: Batch Loss = 0.8954052925109863, Accuracy = 0.7864719033241272  
Iter #2646016: Learning rate = 0.001730: Batch Loss = 0.836296, Accuracy = 0.802734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8661041855812073, Accuracy = 0.8059467673301697  
Iter #2650112: Learning rate = 0.001730: Batch Loss = 0.826849, Accuracy = 0.828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.8939279317855835, Accuracy = 0.7930794358253479  
Iter #2654208: Learning rate = 0.001730: Batch Loss = 0.889475, Accuracy = 0.794921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9310283064842224, Accuracy = 0.7650843262672424  
Iter #2658304: Learning rate = 0.001730: Batch Loss = 0.843154, Accuracy = 0.814453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.8871028423309326, Accuracy = 0.7998608946800232  
Iter #2662400: Learning rate = 0.001730: Batch Loss = 0.859468, Accuracy = 0.802734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8735517263412476, Accuracy = 0.7889062762260437  
Iter #2666496: Learning rate = 0.001730: Batch Loss = 0.853007, Accuracy = 0.82421875  
PERFORMANCE ON TEST SET: Batch Loss = 0.892049252986908, Accuracy = 0.7786471843719482  
Iter #2670592: Learning rate = 0.001730: Batch Loss = 0.873820, Accuracy = 0.806640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.893176794052124, Accuracy = 0.7725613117218018  
Iter #2674688: Learning rate = 0.001730: Batch Loss = 0.799087, Accuracy = 0.8203125  
PERFORMANCE ON TEST SET: Batch Loss = 0.8748794794082642, Accuracy = 0.8045557141304016  
Iter #2678784: Learning rate = 0.001730: Batch Loss = 0.841008, Accuracy = 0.833984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.9053493142127991, Accuracy = 0.7974265217781067  
Iter #2682880: Learning rate = 0.001730: Batch Loss = 0.739572, Accuracy = 0.865234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8997687697410583, Accuracy =

```
racy = 0.8017736077308655
Iter #2686976: Learning rate = 0.001730: Batch Loss = 0.817024, Accurac
y = 0.814453125
PERFORMANCE ON TEST SET: Batch Loss = 0.8873555064201355, Accu
racy = 0.7763867378234863
Iter #2691072: Learning rate = 0.001730: Batch Loss = 0.824966, Accurac
y = 0.818359375
PERFORMANCE ON TEST SET: Batch Loss = 0.8685689568519592, Accu
racy = 0.8094244599342346
Iter #2695168: Learning rate = 0.001730: Batch Loss = 0.805101, Accurac
y = 0.853515625
PERFORMANCE ON TEST SET: Batch Loss = 0.8506677150726318, Accu
racy = 0.8167275190353394
Iter #2699264: Learning rate = 0.001730: Batch Loss = 0.803483, Accurac
y = 0.8359375
PERFORMANCE ON TEST SET: Batch Loss = 0.8428695201873779, Accu
racy = 0.8111632466316223
Iter #2703360: Learning rate = 0.001661: Batch Loss = 0.755635, Accurac
y = 0.8515625
PERFORMANCE ON TEST SET: Batch Loss = 0.862490177154541, Accur
acy = 0.8118588328361511
Iter #2707456: Learning rate = 0.001661: Batch Loss = 0.779442, Accurac
y = 0.84375
PERFORMANCE ON TEST SET: Batch Loss = 0.8383185863494873, Accu
racy = 0.818988025188446
Iter #2711552: Learning rate = 0.001661: Batch Loss = 0.795315, Accurac
y = 0.8203125
PERFORMANCE ON TEST SET: Batch Loss = 0.8688585758209229, Accu
racy = 0.8090766668319702
Iter #2715648: Learning rate = 0.001661: Batch Loss = 0.749914, Accurac
y = 0.853515625
PERFORMANCE ON TEST SET: Batch Loss = 0.843782901763916, Accur
acy = 0.8076856136322021
Iter #2719744: Learning rate = 0.001661: Batch Loss = 0.784643, Accurac
y = 0.833984375
PERFORMANCE ON TEST SET: Batch Loss = 0.8733795285224915, Accu
racy = 0.8153364658355713
Iter #2723840: Learning rate = 0.001661: Batch Loss = 0.781164, Accurac
y = 0.849609375
PERFORMANCE ON TEST SET: Batch Loss = 0.9426486492156982, Accu
racy = 0.7988175749778748
Iter #2727936: Learning rate = 0.001661: Batch Loss = 0.796433, Accurac
y = 0.81640625
PERFORMANCE ON TEST SET: Batch Loss = 0.8472400903701782, Accu
racy = 0.8186402320861816
Iter #2732032: Learning rate = 0.001661: Batch Loss = 0.737072, Accurac
y = 0.85546875
PERFORMANCE ON TEST SET: Batch Loss = 0.8431919813156128, Accu
racy = 0.8228134512901306
Iter #2736128: Learning rate = 0.001661: Batch Loss = 0.777000, Accurac
y = 0.84375
PERFORMANCE ON TEST SET: Batch Loss = 0.8360099792480469, Accu
racy = 0.8210746049880981
Iter #2740224: Learning rate = 0.001661: Batch Loss = 0.785217, Accurac
y = 0.82421875
PERFORMANCE ON TEST SET: Batch Loss = 0.8579179048538208, Accu
racy = 0.80559903383255
Iter #2744320: Learning rate = 0.001661: Batch Loss = 0.796419, Accurac
y = 0.822265625
PERFORMANCE ON TEST SET: Batch Loss = 0.8171462416648865, Accu
racy = 0.8266388177871704
```



Iter #2748416: Learning rate = 0.001661: Batch Loss = 0.781689, Accuracy = 0.830078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.8742567300796509, Accuracy = 0.8080334067344666  
Iter #2752512: Learning rate = 0.001661: Batch Loss = 0.771094, Accuracy = 0.86328125  
PERFORMANCE ON TEST SET: Batch Loss = 0.8581210374832153, Accuracy = 0.7986437082290649  
Iter #2756608: Learning rate = 0.001661: Batch Loss = 0.704043, Accuracy = 0.880859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8371187448501587, Accuracy = 0.8087289333343506  
Iter #2760704: Learning rate = 0.001661: Batch Loss = 0.711408, Accuracy = 0.873046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.8073700666427612, Accuracy = 0.8313336968421936  
Iter #2764800: Learning rate = 0.001661: Batch Loss = 0.730238, Accuracy = 0.828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7861325740814209, Accuracy = 0.8412449955940247  
Iter #2768896: Learning rate = 0.001661: Batch Loss = 0.694603, Accuracy = 0.859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7753654718399048, Accuracy = 0.8447226285934448  
Iter #2772992: Learning rate = 0.001661: Batch Loss = 0.735093, Accuracy = 0.859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.795419454574585, Accuracy = 0.8388106226921082  
Iter #2777088: Learning rate = 0.001661: Batch Loss = 0.733902, Accuracy = 0.859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8087548017501831, Accuracy = 0.8254216909408569  
Iter #2781184: Learning rate = 0.001661: Batch Loss = 0.759031, Accuracy = 0.86328125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7879842519760132, Accuracy = 0.8292471170425415  
Iter #2785280: Learning rate = 0.001661: Batch Loss = 0.695240, Accuracy = 0.859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7878859043121338, Accuracy = 0.8428099751472473  
Iter #2789376: Learning rate = 0.001661: Batch Loss = 0.738152, Accuracy = 0.857421875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7698531150817871, Accuracy = 0.8365501761436462  
Iter #2793472: Learning rate = 0.001661: Batch Loss = 0.713278, Accuracy = 0.87109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8005120754241943, Accuracy = 0.8309859037399292  
Iter #2797568: Learning rate = 0.001661: Batch Loss = 0.669721, Accuracy = 0.88671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7585604190826416, Accuracy = 0.8624587059020996  
Iter #2801664: Learning rate = 0.001594: Batch Loss = 0.756000, Accuracy = 0.845703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7524011135101318, Accuracy = 0.8450704216957092  
Iter #2805760: Learning rate = 0.001594: Batch Loss = 0.737781, Accuracy = 0.8671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.849351167678833, Accuracy = 0.8255955576896667  
Iter #2809856: Learning rate = 0.001594: Batch Loss = 0.733385, Accuracy =

```
y = 0.869140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.7642515897750854, Accu
racy = 0.8398539423942566
Iter #2813952: Learning rate = 0.001594: Batch Loss = 0.743442, Accurac
y = 0.86328125
PERFORMANCE ON TEST SET:          Batch Loss = 0.7638765573501587, Accu
racy = 0.8391584157943726
Iter #2818048: Learning rate = 0.001594: Batch Loss = 0.751699, Accurac
y = 0.849609375
PERFORMANCE ON TEST SET:          Batch Loss = 0.7553064823150635, Accu
racy = 0.8417666554450989
Iter #2822144: Learning rate = 0.001594: Batch Loss = 0.686847, Accurac
y = 0.8828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.7290030717849731, Accu
racy = 0.86576247215271
Iter #2826240: Learning rate = 0.001594: Batch Loss = 0.684098, Accurac
y = 0.8828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.760366678237915, Accur
acy = 0.8471570014953613
Iter #2830336: Learning rate = 0.001594: Batch Loss = 0.675206, Accurac
y = 0.8828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.7249462604522705, Accu
racy = 0.8676751852035522
Iter #2834432: Learning rate = 0.001594: Batch Loss = 0.667653, Accurac
y = 0.87890625
PERFORMANCE ON TEST SET:          Batch Loss = 0.7261780500411987, Accu
racy = 0.8697617650032043
Iter #2838528: Learning rate = 0.001594: Batch Loss = 0.650376, Accurac
y = 0.90234375
PERFORMANCE ON TEST SET:          Batch Loss = 0.7170584201812744, Accu
racy = 0.8741088509559631
Iter #2842624: Learning rate = 0.001594: Batch Loss = 0.731588, Accurac
y = 0.857421875
PERFORMANCE ON TEST SET:          Batch Loss = 0.724698007106781, Accur
acy = 0.8603721261024475
Iter #2846720: Learning rate = 0.001594: Batch Loss = 0.657471, Accurac
y = 0.865234375
PERFORMANCE ON TEST SET:          Batch Loss = 0.7193485498428345, Accu
racy = 0.870631217956543
Iter #2850816: Learning rate = 0.001594: Batch Loss = 0.664121, Accurac
y = 0.88671875
PERFORMANCE ON TEST SET:          Batch Loss = 0.7240687012672424, Accu
racy = 0.871326744556427
Iter #2854912: Learning rate = 0.001594: Batch Loss = 0.732218, Accurac
y = 0.857421875
PERFORMANCE ON TEST SET:          Batch Loss = 0.7437025308609009, Accu
racy = 0.8638497591018677
Iter #2859008: Learning rate = 0.001594: Batch Loss = 0.648815, Accurac
y = 0.888671875
PERFORMANCE ON TEST SET:          Batch Loss = 0.750897228717804, Accur
acy = 0.8648930788040161
Iter #2863104: Learning rate = 0.001594: Batch Loss = 0.658882, Accurac
y = 0.8828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.726648211479187, Accur
acy = 0.8647191524505615
Iter #2867200: Learning rate = 0.001594: Batch Loss = 0.653445, Accurac
y = 0.89453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.7521296739578247, Accu
racy = 0.8485480546951294
Iter #2871296: Learning rate = 0.001594: Batch Loss = 0.651945, Accurac
y = 0.89453125
```

PERFORMANCE ON TEST SET: Batch Loss = 0.7381912469863892, Accuracy = 0.8513302206993103  
Iter #2875392: Learning rate = 0.001594: Batch Loss = 0.624962, Accuracy = 0.8984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7016326189041138, Accuracy = 0.8810641765594482  
Iter #2879488: Learning rate = 0.001594: Batch Loss = 0.697106, Accuracy = 0.873046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7222169041633606, Accuracy = 0.8699356913566589  
Iter #2883584: Learning rate = 0.001594: Batch Loss = 0.668588, Accuracy = 0.88671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7179802656173706, Accuracy = 0.871326744556427  
Iter #2887680: Learning rate = 0.001594: Batch Loss = 0.746529, Accuracy = 0.861328125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7486504316329956, Accuracy = 0.8619370460510254  
Iter #2891776: Learning rate = 0.001594: Batch Loss = 0.675991, Accuracy = 0.876953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7167770266532898, Accuracy = 0.8761954307556152  
Iter #2895872: Learning rate = 0.001594: Batch Loss = 0.671471, Accuracy = 0.87890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.746688723564148, Accuracy = 0.8589810729026794  
Iter #2899968: Learning rate = 0.001594: Batch Loss = 0.684603, Accuracy = 0.873046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7378972768783569, Accuracy = 0.8695878982543945  
Iter #2904064: Learning rate = 0.001531: Batch Loss = 0.697637, Accuracy = 0.869140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.7208327054977417, Accuracy = 0.8607198596000671  
Iter #2908160: Learning rate = 0.001531: Batch Loss = 0.700716, Accuracy = 0.8671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7302581071853638, Accuracy = 0.8680229783058167  
Iter #2912256: Learning rate = 0.001531: Batch Loss = 0.714719, Accuracy = 0.857421875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7125714421272278, Accuracy = 0.8702834248542786  
Iter #2916352: Learning rate = 0.001531: Batch Loss = 0.667261, Accuracy = 0.8828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7157679200172424, Accuracy = 0.8551556468009949  
Iter #2920448: Learning rate = 0.001531: Batch Loss = 0.643620, Accuracy = 0.890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6781882047653198, Accuracy = 0.8887150287628174  
Iter #2924544: Learning rate = 0.001531: Batch Loss = 0.677344, Accuracy = 0.884765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.701819121837616, Accuracy = 0.8754999041557312  
Iter #2928640: Learning rate = 0.001531: Batch Loss = 0.651428, Accuracy = 0.900390625  
PERFORMANCE ON TEST SET: Batch Loss = 0.7541266679763794, Accuracy = 0.8615893125534058  
Iter #2932736: Learning rate = 0.001531: Batch Loss = 0.644461, Accuracy = 0.88671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7939023971557617, Accuracy = 0.88671875

```
racy = 0.8412449955940247
Iter #2936832: Learning rate = 0.001531: Batch Loss = 0.608174, Accuracy = 0.9140625
PERFORMANCE ON TEST SET: Batch Loss = 0.723032534122467, Accuracy = 0.8577638864517212
Iter #2940928: Learning rate = 0.001531: Batch Loss = 0.654331, Accuracy = 0.90234375
PERFORMANCE ON TEST SET: Batch Loss = 0.6914047598838806, Accuracy = 0.8836724162101746
Iter #2945024: Learning rate = 0.001531: Batch Loss = 0.703979, Accuracy = 0.865234375
PERFORMANCE ON TEST SET: Batch Loss = 0.6923818588256836, Accuracy = 0.8661102652549744
Iter #2949120: Learning rate = 0.001531: Batch Loss = 0.584213, Accuracy = 0.916015625
PERFORMANCE ON TEST SET: Batch Loss = 0.6794596910476685, Accuracy = 0.8845418095588684
Iter #2953216: Learning rate = 0.001531: Batch Loss = 0.660517, Accuracy = 0.86328125
PERFORMANCE ON TEST SET: Batch Loss = 0.6732302904129028, Accuracy = 0.8901060819625854
Iter #2957312: Learning rate = 0.001531: Batch Loss = 0.587530, Accuracy = 0.90625
PERFORMANCE ON TEST SET: Batch Loss = 0.7052233219146729, Accuracy = 0.8753260374069214
Iter #2961408: Learning rate = 0.001531: Batch Loss = 0.631196, Accuracy = 0.904296875
PERFORMANCE ON TEST SET: Batch Loss = 0.6886124014854431, Accuracy = 0.8848896026611328
Iter #2965504: Learning rate = 0.001531: Batch Loss = 0.607437, Accuracy = 0.900390625
PERFORMANCE ON TEST SET: Batch Loss = 0.6773124933242798, Accuracy = 0.8855851292610168
Iter #2969600: Learning rate = 0.001531: Batch Loss = 0.590208, Accuracy = 0.91015625
PERFORMANCE ON TEST SET: Batch Loss = 0.6781336665153503, Accuracy = 0.8841940760612488
Iter #2973696: Learning rate = 0.001531: Batch Loss = 0.610695, Accuracy = 0.896484375
PERFORMANCE ON TEST SET: Batch Loss = 0.6726720333099365, Accuracy = 0.8721961379051208
Iter #2977792: Learning rate = 0.001531: Batch Loss = 0.590008, Accuracy = 0.90625
PERFORMANCE ON TEST SET: Batch Loss = 0.665503740310669, Accuracy = 0.8760215640068054
Iter #2981888: Learning rate = 0.001531: Batch Loss = 0.699020, Accuracy = 0.8671875
PERFORMANCE ON TEST SET: Batch Loss = 0.6813334226608276, Accuracy = 0.8873239159584045
Iter #2985984: Learning rate = 0.001531: Batch Loss = 0.643322, Accuracy = 0.869140625
PERFORMANCE ON TEST SET: Batch Loss = 0.698880672454834, Accuracy = 0.857242226600647
Iter #2990080: Learning rate = 0.001531: Batch Loss = 0.620385, Accuracy = 0.90234375
PERFORMANCE ON TEST SET: Batch Loss = 0.712397038936615, Accuracy = 0.8735871911048889
Iter #2994176: Learning rate = 0.001531: Batch Loss = 0.677789, Accuracy = 0.873046875
PERFORMANCE ON TEST SET: Batch Loss = 0.6673047542572021, Accuracy = 0.8786298036575317
```

Iter #2998272: Learning rate = 0.001531: Batch Loss = 0.695654, Accuracy = 0.8671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7736760973930359, Accuracy = 0.8283776640892029  
Iter #3002368: Learning rate = 0.001469: Batch Loss = 0.731571, Accuracy = 0.87109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6940262913703918, Accuracy = 0.8768909573554993  
Iter #3006464: Learning rate = 0.001469: Batch Loss = 0.610301, Accuracy = 0.908203125  
PERFORMANCE ON TEST SET: Batch Loss = 0.670367956161499, Accuracy = 0.8786298036575317  
Iter #3010560: Learning rate = 0.001469: Batch Loss = 0.557367, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6446675062179565, Accuracy = 0.8958442211151123  
Iter #3014656: Learning rate = 0.001469: Batch Loss = 0.647431, Accuracy = 0.8828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7278150916099548, Accuracy = 0.8542861938476562  
Iter #3018752: Learning rate = 0.001469: Batch Loss = 0.615454, Accuracy = 0.8984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6693516373634338, Accuracy = 0.8838462829589844  
Iter #3022848: Learning rate = 0.001469: Batch Loss = 0.652040, Accuracy = 0.87890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6797966957092285, Accuracy = 0.8840201497077942  
Iter #3026944: Learning rate = 0.001469: Batch Loss = 0.617167, Accuracy = 0.884765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.716065526008606, Accuracy = 0.8603721261024475  
Iter #3031040: Learning rate = 0.001469: Batch Loss = 0.686453, Accuracy = 0.87890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6666976809501648, Accuracy = 0.8914971351623535  
Iter #3035136: Learning rate = 0.001469: Batch Loss = 0.581566, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6605812311172485, Accuracy = 0.8930620551109314  
Iter #3039232: Learning rate = 0.001469: Batch Loss = 0.688416, Accuracy = 0.888671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6910697221755981, Accuracy = 0.8765432238578796  
Iter #3043328: Learning rate = 0.001469: Batch Loss = 0.616279, Accuracy = 0.900390625  
PERFORMANCE ON TEST SET: Batch Loss = 0.668016254901886, Accuracy = 0.8786298036575317  
Iter #3047424: Learning rate = 0.001469: Batch Loss = 0.620258, Accuracy = 0.9140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.658342719078064, Accuracy = 0.8948009014129639  
Iter #3051520: Learning rate = 0.001469: Batch Loss = 0.621266, Accuracy = 0.90625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6485791206359863, Accuracy = 0.8873239159584045  
Iter #3055616: Learning rate = 0.001469: Batch Loss = 0.590867, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6504862308502197, Accuracy = 0.8862806558609009  
Iter #3059712: Learning rate = 0.001469: Batch Loss = 0.599093, Accuracy =

```
y = 0.89453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6405001878738403, Accu
racy = 0.8970614075660706
Iter #3063808: Learning rate = 0.001469: Batch Loss = 0.575355, Accurac
y = 0.91796875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6527310013771057, Accu
racy = 0.8979308009147644
Iter #3067904: Learning rate = 0.001469: Batch Loss = 0.758795, Accurac
y = 0.853515625
PERFORMANCE ON TEST SET:          Batch Loss = 0.7063064575195312, Accu
racy = 0.870631217956543
Iter #3072000: Learning rate = 0.001469: Batch Loss = 0.651075, Accurac
y = 0.91015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6947566866874695, Accu
racy = 0.8688923716545105
Iter #3076096: Learning rate = 0.001469: Batch Loss = 0.806609, Accurac
y = 0.837890625
PERFORMANCE ON TEST SET:          Batch Loss = 0.7186765670776367, Accu
racy = 0.871326744556427
Iter #3080192: Learning rate = 0.001469: Batch Loss = 0.645827, Accurac
y = 0.900390625
PERFORMANCE ON TEST SET:          Batch Loss = 0.7151709198951721, Accu
racy = 0.8741088509559631
Iter #3084288: Learning rate = 0.001469: Batch Loss = 0.681554, Accurac
y = 0.853515625
PERFORMANCE ON TEST SET:          Batch Loss = 0.7116309404373169, Accu
racy = 0.8504607677459717
Iter #3088384: Learning rate = 0.001469: Batch Loss = 0.639462, Accurac
y = 0.892578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6564059257507324, Accu
racy = 0.8880195021629333
Iter #3092480: Learning rate = 0.001469: Batch Loss = 0.598931, Accurac
y = 0.923828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6588230133056641, Accu
racy = 0.8874978423118591
Iter #3096576: Learning rate = 0.001469: Batch Loss = 0.568043, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6536502242088318, Accu
racy = 0.8880195021629333
Iter #3100672: Learning rate = 0.001411: Batch Loss = 0.609061, Accurac
y = 0.908203125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6930086612701416, Accu
racy = 0.8812380433082581
Iter #3104768: Learning rate = 0.001411: Batch Loss = 0.626950, Accurac
y = 0.8828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6681365966796875, Accu
racy = 0.8688923716545105
Iter #3108864: Learning rate = 0.001411: Batch Loss = 0.598290, Accurac
y = 0.91796875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6515148878097534, Accu
racy = 0.8921926617622375
Iter #3112960: Learning rate = 0.001411: Batch Loss = 0.548740, Accurac
y = 0.919921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.667192816734314, Accur
acy = 0.8899322152137756
Iter #3117056: Learning rate = 0.001411: Batch Loss = 0.646171, Accurac
y = 0.892578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6605244874954224, Accu
racy = 0.8788036704063416
Iter #3121152: Learning rate = 0.001411: Batch Loss = 0.592917, Accurac
y = 0.923828125
```

PERFORMANCE ON TEST SET: Batch Loss = 0.6700097322463989, Accuracy = 0.8902799487113953  
Iter #3125248: Learning rate = 0.001411: Batch Loss = 0.613009, Accuracy = 0.916015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6752814054489136, Accuracy = 0.8873239159584045  
Iter #3129344: Learning rate = 0.001411: Batch Loss = 0.588996, Accuracy = 0.91015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6679282188415527, Accuracy = 0.8748043775558472  
Iter #3133440: Learning rate = 0.001411: Batch Loss = 0.623284, Accuracy = 0.912109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6625180840492249, Accuracy = 0.8904538154602051  
Iter #3137536: Learning rate = 0.001411: Batch Loss = 0.621729, Accuracy = 0.892578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6702600717544556, Accuracy = 0.8871500492095947  
Iter #3141632: Learning rate = 0.001411: Batch Loss = 0.610044, Accuracy = 0.90625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6586799621582031, Accuracy = 0.89393150806427  
Iter #3145728: Learning rate = 0.001411: Batch Loss = 0.596891, Accuracy = 0.904296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6489585638046265, Accuracy = 0.8822813630104065  
Iter #3149824: Learning rate = 0.001411: Batch Loss = 0.617947, Accuracy = 0.912109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6452418565750122, Accuracy = 0.8993218541145325  
Iter #3153920: Learning rate = 0.001411: Batch Loss = 0.706764, Accuracy = 0.865234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6648589968681335, Accuracy = 0.879151463508606  
Iter #3158016: Learning rate = 0.001411: Batch Loss = 0.661114, Accuracy = 0.873046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6708112955093384, Accuracy = 0.8873239159584045  
Iter #3162112: Learning rate = 0.001411: Batch Loss = 0.627954, Accuracy = 0.8984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6397759318351746, Accuracy = 0.8928881883621216  
Iter #3166208: Learning rate = 0.001411: Batch Loss = 0.599669, Accuracy = 0.90234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6571735143661499, Accuracy = 0.8779342770576477  
Iter #3170304: Learning rate = 0.001411: Batch Loss = 0.600374, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6403746008872986, Accuracy = 0.8953225612640381  
Iter #3174400: Learning rate = 0.001411: Batch Loss = 0.596623, Accuracy = 0.90234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6496708393096924, Accuracy = 0.8765432238578796  
Iter #3178496: Learning rate = 0.001411: Batch Loss = 0.612077, Accuracy = 0.904296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.666691243648529, Accuracy = 0.8819335699081421  
Iter #3182592: Learning rate = 0.001411: Batch Loss = 0.564816, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7382736802101135, Accuracy =

```
racy = 0.8528951406478882
Iter #3186688: Learning rate = 0.001411: Batch Loss = 0.601975, Accuracy = 0.912109375
PERFORMANCE ON TEST SET: Batch Loss = 0.6913014650344849, Accuracy = 0.8662841320037842
Iter #3190784: Learning rate = 0.001411: Batch Loss = 0.650918, Accuracy = 0.873046875
PERFORMANCE ON TEST SET: Batch Loss = 0.6596813201904297, Accuracy = 0.8838462829589844
Iter #3194880: Learning rate = 0.001411: Batch Loss = 0.574858, Accuracy = 0.91796875
PERFORMANCE ON TEST SET: Batch Loss = 0.6404714584350586, Accuracy = 0.8850634694099426
Iter #3198976: Learning rate = 0.001411: Batch Loss = 0.566849, Accuracy = 0.91796875
PERFORMANCE ON TEST SET: Batch Loss = 0.6365432739257812, Accuracy = 0.896887481212616
Iter #3203072: Learning rate = 0.001354: Batch Loss = 0.650956, Accuracy = 0.880859375
PERFORMANCE ON TEST SET: Batch Loss = 0.6494165062904358, Accuracy = 0.8914971351623535
Iter #3207168: Learning rate = 0.001354: Batch Loss = 0.656143, Accuracy = 0.896484375
PERFORMANCE ON TEST SET: Batch Loss = 0.6887513995170593, Accuracy = 0.8767170906066895
Iter #3211264: Learning rate = 0.001354: Batch Loss = 0.596079, Accuracy = 0.904296875
PERFORMANCE ON TEST SET: Batch Loss = 0.6362704038619995, Accuracy = 0.8954964280128479
Iter #3215360: Learning rate = 0.001354: Batch Loss = 0.592383, Accuracy = 0.916015625
PERFORMANCE ON TEST SET: Batch Loss = 0.6471551060676575, Accuracy = 0.8775864839553833
Iter #3219456: Learning rate = 0.001354: Batch Loss = 0.601404, Accuracy = 0.90625
PERFORMANCE ON TEST SET: Batch Loss = 0.6413225531578064, Accuracy = 0.8831507563591003
Iter #3223552: Learning rate = 0.001354: Batch Loss = 0.535623, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.6466091871261597, Accuracy = 0.8920187950134277
Iter #3227648: Learning rate = 0.001354: Batch Loss = 0.570983, Accuracy = 0.900390625
PERFORMANCE ON TEST SET: Batch Loss = 0.6396497488021851, Accuracy = 0.8868023157119751
Iter #3231744: Learning rate = 0.001354: Batch Loss = 0.562597, Accuracy = 0.91796875
PERFORMANCE ON TEST SET: Batch Loss = 0.6437282562255859, Accuracy = 0.8951486945152283
Iter #3235840: Learning rate = 0.001354: Batch Loss = 0.551507, Accuracy = 0.92578125
PERFORMANCE ON TEST SET: Batch Loss = 0.6552374362945557, Accuracy = 0.8786298036575317
Iter #3239936: Learning rate = 0.001354: Batch Loss = 0.589840, Accuracy = 0.90625
PERFORMANCE ON TEST SET: Batch Loss = 0.6518359184265137, Accuracy = 0.8796731233596802
Iter #3244032: Learning rate = 0.001354: Batch Loss = 0.548762, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.6387667655944824, Accuracy = 0.894627034664154
```



Iter #3248128: Learning rate = 0.001354: Batch Loss = 0.549955, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6416323184967041, Accuracy = 0.8895844221115112  
Iter #3252224: Learning rate = 0.001354: Batch Loss = 0.600841, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6727404594421387, Accuracy = 0.8753260374069214  
Iter #3256320: Learning rate = 0.001354: Batch Loss = 0.536734, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6557528972625732, Accuracy = 0.8930620551109314  
Iter #3260416: Learning rate = 0.001354: Batch Loss = 0.574456, Accuracy = 0.904296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6485773324966431, Accuracy = 0.893235981464386  
Iter #3264512: Learning rate = 0.001354: Batch Loss = 0.603581, Accuracy = 0.9140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6828123927116394, Accuracy = 0.8814119100570679  
Iter #3268608: Learning rate = 0.001354: Batch Loss = 0.652878, Accuracy = 0.880859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6635400056838989, Accuracy = 0.8812380433082581  
Iter #3272704: Learning rate = 0.001354: Batch Loss = 0.694872, Accuracy = 0.84765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6503121852874756, Accuracy = 0.8796731233596802  
Iter #3276800: Learning rate = 0.001354: Batch Loss = 0.583710, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6425055861473083, Accuracy = 0.8967136144638062  
Iter #3280896: Learning rate = 0.001354: Batch Loss = 0.556750, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6421613097190857, Accuracy = 0.8965397477149963  
Iter #3284992: Learning rate = 0.001354: Batch Loss = 0.593310, Accuracy = 0.908203125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6605731844902039, Accuracy = 0.8836724162101746  
Iter #3289088: Learning rate = 0.001354: Batch Loss = 0.582187, Accuracy = 0.91015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6731743812561035, Accuracy = 0.8732394576072693  
Iter #3293184: Learning rate = 0.001354: Batch Loss = 0.576105, Accuracy = 0.9140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6466308832168579, Accuracy = 0.8918448686599731  
Iter #3297280: Learning rate = 0.001354: Batch Loss = 0.560798, Accuracy = 0.916015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6683669686317444, Accuracy = 0.8751521706581116  
Iter #3301376: Learning rate = 0.001300: Batch Loss = 0.584661, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6446294784545898, Accuracy = 0.8821074366569519  
Iter #3305472: Learning rate = 0.001300: Batch Loss = 0.631879, Accuracy = 0.89453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.628947913646698, Accuracy = 0.888367235660553  
Iter #3309568: Learning rate = 0.001300: Batch Loss = 0.562689, Accuracy =

```
y = 0.923828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6303668022155762, Accu
racy = 0.8998435139656067
Iter #3313664: Learning rate = 0.001300: Batch Loss = 0.589085, Accurac
y = 0.916015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6208632588386536, Accu
racy = 0.9008867740631104
Iter #3317760: Learning rate = 0.001300: Batch Loss = 0.562610, Accurac
y = 0.92578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6296918392181396, Accu
racy = 0.8881933689117432
Iter #3321856: Learning rate = 0.001300: Batch Loss = 0.614780, Accurac
y = 0.90625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6543347835540771, Accu
racy = 0.8819335699081421
Iter #3325952: Learning rate = 0.001300: Batch Loss = 0.593154, Accurac
y = 0.896484375
PERFORMANCE ON TEST SET:          Batch Loss = 0.647034764289856, Accur
acy = 0.892540454864502
Iter #3330048: Learning rate = 0.001300: Batch Loss = 0.588262, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6479647159576416, Accu
racy = 0.8833246231079102
Iter #3334144: Learning rate = 0.001300: Batch Loss = 0.560451, Accurac
y = 0.921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6377781629562378, Accu
racy = 0.9007129073143005
Iter #3338240: Learning rate = 0.001300: Batch Loss = 0.562615, Accurac
y = 0.927734375
PERFORMANCE ON TEST SET:          Batch Loss = 0.6639331579208374, Accu
racy = 0.874282717704773
Iter #3342336: Learning rate = 0.001300: Batch Loss = 0.607120, Accurac
y = 0.890625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6324560046195984, Accu
racy = 0.8974091410636902
Iter #3346432: Learning rate = 0.001300: Batch Loss = 0.577593, Accurac
y = 0.900390625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6361640691757202, Accu
racy = 0.8961919546127319
Iter #3350528: Learning rate = 0.001300: Batch Loss = 0.601940, Accurac
y = 0.908203125
PERFORMANCE ON TEST SET:          Batch Loss = 0.621391773223877, Accur
acy = 0.8935837149620056
Iter #3354624: Learning rate = 0.001300: Batch Loss = 0.544772, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6388837099075317, Accu
racy = 0.8881933689117432
Iter #3358720: Learning rate = 0.001300: Batch Loss = 0.593740, Accurac
y = 0.896484375
PERFORMANCE ON TEST SET:          Batch Loss = 0.6316921710968018, Accu
racy = 0.8817597031593323
Iter #3362816: Learning rate = 0.001300: Batch Loss = 0.598449, Accurac
y = 0.91015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6209471821784973, Accu
racy = 0.8857589960098267
Iter #3366912: Learning rate = 0.001300: Batch Loss = 0.566896, Accurac
y = 0.912109375
PERFORMANCE ON TEST SET:          Batch Loss = 0.6329228281974792, Accu
racy = 0.8948009014129639
Iter #3371008: Learning rate = 0.001300: Batch Loss = 0.585629, Accurac
y = 0.916015625
```

PERFORMANCE ON TEST SET: Batch Loss = 0.6471407413482666, Accuracy = 0.8834985494613647  
Iter #3375104: Learning rate = 0.001300: Batch Loss = 0.542030, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6329561471939087, Accuracy = 0.8850634694099426  
Iter #3379200: Learning rate = 0.001300: Batch Loss = 0.551697, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6218336820602417, Accuracy = 0.9026256203651428  
Iter #3383296: Learning rate = 0.001300: Batch Loss = 0.532236, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6305158138275146, Accuracy = 0.8894105553627014  
Iter #3387392: Learning rate = 0.001300: Batch Loss = 0.565974, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6212453842163086, Accuracy = 0.892540454864502  
Iter #3391488: Learning rate = 0.001300: Batch Loss = 0.574425, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6583229303359985, Accuracy = 0.874282717704773  
Iter #3395584: Learning rate = 0.001300: Batch Loss = 0.563508, Accuracy = 0.896484375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6359311938285828, Accuracy = 0.8887150287628174  
Iter #3399680: Learning rate = 0.001300: Batch Loss = 0.613886, Accuracy = 0.892578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7038145065307617, Accuracy = 0.8678490519523621  
Iter #3403776: Learning rate = 0.001248: Batch Loss = 0.587374, Accuracy = 0.890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6676182746887207, Accuracy = 0.8869761824607849  
Iter #3407872: Learning rate = 0.001248: Batch Loss = 0.625176, Accuracy = 0.884765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.659644603729248, Accuracy = 0.8725439310073853  
Iter #3411968: Learning rate = 0.001248: Batch Loss = 0.609398, Accuracy = 0.888671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6357436776161194, Accuracy = 0.8941053748130798  
Iter #3416064: Learning rate = 0.001248: Batch Loss = 0.779501, Accuracy = 0.83984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.750482439994812, Accuracy = 0.8546339869499207  
Iter #3420160: Learning rate = 0.001248: Batch Loss = 0.608332, Accuracy = 0.900390625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6805396676063538, Accuracy = 0.8770648837089539  
Iter #3424256: Learning rate = 0.001248: Batch Loss = 0.611991, Accuracy = 0.916015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6931196451187134, Accuracy = 0.8748043775558472  
Iter #3428352: Learning rate = 0.001248: Batch Loss = 0.573308, Accuracy = 0.912109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6722413897514343, Accuracy = 0.8772387504577637  
Iter #3432448: Learning rate = 0.001248: Batch Loss = 0.619504, Accuracy = 0.90234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6610772609710693, Accuracy = 0.8772387504577637

```
racy = 0.8829768896102905
Iter #3436544: Learning rate = 0.001248: Batch Loss = 0.565938, Accuracy = 0.919921875
PERFORMANCE ON TEST SET: Batch Loss = 0.6413213014602661, Accuracy = 0.8937575817108154
Iter #3440640: Learning rate = 0.001248: Batch Loss = 0.536671, Accuracy = 0.931640625
PERFORMANCE ON TEST SET: Batch Loss = 0.6173089742660522, Accuracy = 0.9010607004165649
Iter #3444736: Learning rate = 0.001248: Batch Loss = 0.558511, Accuracy = 0.931640625
PERFORMANCE ON TEST SET: Batch Loss = 0.6000082492828369, Accuracy = 0.9083637595176697
Iter #3448832: Learning rate = 0.001248: Batch Loss = 0.533848, Accuracy = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.6130942106246948, Accuracy = 0.9010607004165649
Iter #3452928: Learning rate = 0.001248: Batch Loss = 0.610295, Accuracy = 0.904296875
PERFORMANCE ON TEST SET: Batch Loss = 0.6177054643630981, Accuracy = 0.9040166735649109
Iter #3457024: Learning rate = 0.001248: Batch Loss = 0.523855, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.6376559734344482, Accuracy = 0.8970614075660706
Iter #3461120: Learning rate = 0.001248: Batch Loss = 0.624972, Accuracy = 0.896484375
PERFORMANCE ON TEST SET: Batch Loss = 0.6196956634521484, Accuracy = 0.8930620551109314
Iter #3465216: Learning rate = 0.001248: Batch Loss = 0.560938, Accuracy = 0.9140625
PERFORMANCE ON TEST SET: Batch Loss = 0.6400959491729736, Accuracy = 0.8951486945152283
Iter #3469312: Learning rate = 0.001248: Batch Loss = 0.556367, Accuracy = 0.916015625
PERFORMANCE ON TEST SET: Batch Loss = 0.6136130094528198, Accuracy = 0.9001912474632263
Iter #3473408: Learning rate = 0.001248: Batch Loss = 0.562275, Accuracy = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.6096651554107666, Accuracy = 0.9057555198669434
Iter #3477504: Learning rate = 0.001248: Batch Loss = 0.581637, Accuracy = 0.908203125
PERFORMANCE ON TEST SET: Batch Loss = 0.6071568727493286, Accuracy = 0.8967136144638062
Iter #3481600: Learning rate = 0.001248: Batch Loss = 0.562791, Accuracy = 0.927734375
PERFORMANCE ON TEST SET: Batch Loss = 0.6201263666152954, Accuracy = 0.9022778868675232
Iter #3485696: Learning rate = 0.001248: Batch Loss = 0.538750, Accuracy = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.6415537595748901, Accuracy = 0.901756227016449
Iter #3489792: Learning rate = 0.001248: Batch Loss = 0.518808, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5951422452926636, Accuracy = 0.9113197922706604
Iter #3493888: Learning rate = 0.001248: Batch Loss = 0.551998, Accuracy = 0.921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5969562530517578, Accuracy = 0.9118413925170898
```

Iter #3497984: Learning rate = 0.001248: Batch Loss = 0.541729, Accuracy = 0.91015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6088017225265503, Accuracy = 0.9090592861175537  
Iter #3502080: Learning rate = 0.001198: Batch Loss = 0.524883, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5958379507064819, Accuracy = 0.9146235585212708  
Iter #3506176: Learning rate = 0.001198: Batch Loss = 0.562373, Accuracy = 0.912109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6040958166122437, Accuracy = 0.9055816531181335  
Iter #3510272: Learning rate = 0.001198: Batch Loss = 0.522835, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5905100703239441, Accuracy = 0.910971999168396  
Iter #3514368: Learning rate = 0.001198: Batch Loss = 0.494668, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6125175952911377, Accuracy = 0.9099286794662476  
Iter #3518464: Learning rate = 0.001198: Batch Loss = 0.559716, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5959605574607849, Accuracy = 0.9062771797180176  
Iter #3522560: Learning rate = 0.001198: Batch Loss = 0.567846, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6067091226577759, Accuracy = 0.9074943661689758  
Iter #3526656: Learning rate = 0.001198: Batch Loss = 0.568860, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5890787243843079, Accuracy = 0.915145218372345  
Iter #3530752: Learning rate = 0.001198: Batch Loss = 0.516215, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5815877318382263, Accuracy = 0.9114936590194702  
Iter #3534848: Learning rate = 0.001198: Batch Loss = 0.567066, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6006016731262207, Accuracy = 0.9092331528663635  
Iter #3538944: Learning rate = 0.001198: Batch Loss = 0.526356, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5860342979431152, Accuracy = 0.9099286794662476  
Iter #3543040: Learning rate = 0.001198: Batch Loss = 0.511477, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.63090980052948, Accuracy = 0.8963658213615417  
Iter #3547136: Learning rate = 0.001198: Batch Loss = 0.519083, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5975768566131592, Accuracy = 0.9069727063179016  
Iter #3551232: Learning rate = 0.001198: Batch Loss = 0.494240, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5905280113220215, Accuracy = 0.9125369787216187  
Iter #3555328: Learning rate = 0.001198: Batch Loss = 0.497472, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6003861427307129, Accuracy = 0.91166752576828  
Iter #3559424: Learning rate = 0.001198: Batch Loss = 0.540215, Accuracy =

```
y = 0.923828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5938690304756165, Accu
racy = 0.9114936590194702
Iter #3563520: Learning rate = 0.001198: Batch Loss = 0.528473, Accurac
y = 0.9296875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6222648620605469, Accu
racy = 0.9064510464668274
Iter #3567616: Learning rate = 0.001198: Batch Loss = 0.520224, Accurac
y = 0.943359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5958450436592102, Accu
racy = 0.9127108454704285
Iter #3571712: Learning rate = 0.001198: Batch Loss = 0.548229, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5895788669586182, Accu
racy = 0.9101026058197021
Iter #3575808: Learning rate = 0.001198: Batch Loss = 0.511692, Accurac
y = 0.923828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5851582288742065, Accu
racy = 0.9167101383209229
Iter #3579904: Learning rate = 0.001198: Batch Loss = 0.518421, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5867494344711304, Accu
racy = 0.9181011915206909
Iter #3584000: Learning rate = 0.001198: Batch Loss = 0.504387, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.608558177947998, Accur
acy = 0.9099286794662476
Iter #3588096: Learning rate = 0.001198: Batch Loss = 0.570908, Accurac
y = 0.91015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6292814016342163, Accu
racy = 0.8988001942634583
Iter #3592192: Learning rate = 0.001198: Batch Loss = 0.601540, Accurac
y = 0.900390625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6189349293708801, Accu
racy = 0.8941053748130798
Iter #3596288: Learning rate = 0.001198: Batch Loss = 0.534113, Accurac
y = 0.94140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6127307415008545, Accu
racy = 0.9005390405654907
Iter #3600384: Learning rate = 0.001150: Batch Loss = 0.538709, Accurac
y = 0.921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6147638559341431, Accu
racy = 0.9066249132156372
Iter #3604480: Learning rate = 0.001150: Batch Loss = 0.553849, Accurac
y = 0.921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6287510395050049, Accu
racy = 0.8894105553627014
Iter #3608576: Learning rate = 0.001150: Batch Loss = 0.528147, Accurac
y = 0.947265625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5738019943237305, Accu
racy = 0.9134063720703125
Iter #3612672: Learning rate = 0.001150: Batch Loss = 0.561525, Accurac
y = 0.923828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5991308689117432, Accu
racy = 0.9083637595176697
Iter #3616768: Learning rate = 0.001150: Batch Loss = 0.558849, Accurac
y = 0.92578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6051582098007202, Accu
racy = 0.9033211469650269
Iter #3620864: Learning rate = 0.001150: Batch Loss = 0.551311, Accurac
y = 0.9375
```

PERFORMANCE ON TEST SET: Batch Loss = 0.6122322082519531, Accuracy = 0.9104503393173218  
Iter #3624960: Learning rate = 0.001150: Batch Loss = 0.509679, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5988365411758423, Accuracy = 0.9088854193687439  
Iter #3629056: Learning rate = 0.001150: Batch Loss = 0.520136, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.588845431804657, Accuracy = 0.9099286794662476  
Iter #3633152: Learning rate = 0.001150: Batch Loss = 0.578997, Accuracy = 0.900390625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6392368078231812, Accuracy = 0.8948009014129639  
Iter #3637248: Learning rate = 0.001150: Batch Loss = 0.612010, Accuracy = 0.888671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6312434673309326, Accuracy = 0.8824552297592163  
Iter #3641344: Learning rate = 0.001150: Batch Loss = 0.574883, Accuracy = 0.89453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5918912291526794, Accuracy = 0.9036689400672913  
Iter #3645440: Learning rate = 0.001150: Batch Loss = 0.540884, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5870991945266724, Accuracy = 0.9095809459686279  
Iter #3649536: Learning rate = 0.001150: Batch Loss = 0.529461, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5834629535675049, Accuracy = 0.9083637595176697  
Iter #3653632: Learning rate = 0.001150: Batch Loss = 0.528316, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5668783187866211, Accuracy = 0.9226221442222595  
Iter #3657728: Learning rate = 0.001150: Batch Loss = 0.484939, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5743100643157959, Accuracy = 0.9121891856193542  
Iter #3661824: Learning rate = 0.001150: Batch Loss = 0.515388, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5789372324943542, Accuracy = 0.9094070792198181  
Iter #3665920: Learning rate = 0.001150: Batch Loss = 0.528574, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5716521143913269, Accuracy = 0.9198400378227234  
Iter #3670016: Learning rate = 0.001150: Batch Loss = 0.581668, Accuracy = 0.90625  
PERFORMANCE ON TEST SET: Batch Loss = 0.578394889831543, Accuracy = 0.9113197922706604  
Iter #3674112: Learning rate = 0.001150: Batch Loss = 0.569655, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6115889549255371, Accuracy = 0.9066249132156372  
Iter #3678208: Learning rate = 0.001150: Batch Loss = 0.540160, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5866207480430603, Accuracy = 0.9121891856193542  
Iter #3682304: Learning rate = 0.001150: Batch Loss = 0.524880, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5885761976242065, Accuracy = 0.9296875

```
racy = 0.9064510464668274
Iter #3686400: Learning rate = 0.001150: Batch Loss = 0.481743, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET: Batch Loss = 0.5825322270393372, Accu
racy = 0.9085376262664795
Iter #3690496: Learning rate = 0.001150: Batch Loss = 0.518684, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET: Batch Loss = 0.5942084789276123, Accu
racy = 0.91166752576828
Iter #3694592: Learning rate = 0.001150: Batch Loss = 0.548425, Accurac
y = 0.923828125
PERFORMANCE ON TEST SET: Batch Loss = 0.5760058164596558, Accu
racy = 0.9113197922706604
Iter #3698688: Learning rate = 0.001150: Batch Loss = 0.516389, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET: Batch Loss = 0.5870729684829712, Accu
racy = 0.9134063720703125
Iter #3702784: Learning rate = 0.001104: Batch Loss = 0.514676, Accurac
y = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5658901333808899, Accu
racy = 0.9168840050697327
Iter #3706880: Learning rate = 0.001104: Batch Loss = 0.488470, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.5806888341903687, Accu
racy = 0.90801602602005
Iter #3710976: Learning rate = 0.001104: Batch Loss = 0.558738, Accurac
y = 0.919921875
PERFORMANCE ON TEST SET: Batch Loss = 0.6116983294487, Accurac
y = 0.8942792415618896
Iter #3715072: Learning rate = 0.001104: Batch Loss = 0.532282, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET: Batch Loss = 0.5988644361495972, Accu
racy = 0.9062771797180176
Iter #3719168: Learning rate = 0.001104: Batch Loss = 0.539142, Accurac
y = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.6088854074478149, Accu
racy = 0.9083637595176697
Iter #3723264: Learning rate = 0.001104: Batch Loss = 0.522955, Accurac
y = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5804195404052734, Accu
racy = 0.9184489846229553
Iter #3727360: Learning rate = 0.001104: Batch Loss = 0.530611, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5749397277832031, Accu
racy = 0.9114936590194702
Iter #3731456: Learning rate = 0.001104: Batch Loss = 0.552105, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.6002840995788574, Accu
racy = 0.9062771797180176
Iter #3735552: Learning rate = 0.001104: Batch Loss = 0.499460, Accurac
y = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5976368188858032, Accu
racy = 0.9156668186187744
Iter #3739648: Learning rate = 0.001104: Batch Loss = 0.513544, Accurac
y = 0.927734375
PERFORMANCE ON TEST SET: Batch Loss = 0.5803556442260742, Accu
racy = 0.9142757654190063
Iter #3743744: Learning rate = 0.001104: Batch Loss = 0.479956, Accurac
y = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5671409368515015, Accu
racy = 0.919492244720459
```



Iter #3747840: Learning rate = 0.001104: Batch Loss = 0.526270, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5896515846252441, Accuracy = 0.9154929518699646  
Iter #3751936: Learning rate = 0.001104: Batch Loss = 0.468789, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5843260288238525, Accuracy = 0.9149712920188904  
Iter #3756032: Learning rate = 0.001104: Batch Loss = 0.576196, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5975240468978882, Accuracy = 0.8986263275146484  
Iter #3760128: Learning rate = 0.001104: Batch Loss = 0.523905, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6017062664031982, Accuracy = 0.894627034664154  
Iter #3764224: Learning rate = 0.001104: Batch Loss = 0.515790, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6019786596298218, Accuracy = 0.8944531679153442  
Iter #3768320: Learning rate = 0.001104: Batch Loss = 0.536992, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5811336040496826, Accuracy = 0.910276472568512  
Iter #3772416: Learning rate = 0.001104: Batch Loss = 0.537337, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5919690132141113, Accuracy = 0.9088854193687439  
Iter #3776512: Learning rate = 0.001104: Batch Loss = 0.517498, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5983930230140686, Accuracy = 0.9146235585212708  
Iter #3780608: Learning rate = 0.001104: Batch Loss = 0.594472, Accuracy = 0.912109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6237317323684692, Accuracy = 0.8862806558609009  
Iter #3784704: Learning rate = 0.001104: Batch Loss = 0.465216, Accuracy = 0.9609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5680892467498779, Accuracy = 0.9113197922706604  
Iter #3788800: Learning rate = 0.001104: Batch Loss = 0.455245, Accuracy = 0.962890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5651236772537231, Accuracy = 0.9186228513717651  
Iter #3792896: Learning rate = 0.001104: Batch Loss = 0.500486, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5811206102371216, Accuracy = 0.9137541055679321  
Iter #3796992: Learning rate = 0.001104: Batch Loss = 0.480343, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5588409900665283, Accuracy = 0.9191445112228394  
Iter #3801088: Learning rate = 0.001060: Batch Loss = 0.508270, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5717681646347046, Accuracy = 0.9186228513717651  
Iter #3805184: Learning rate = 0.001060: Batch Loss = 0.483906, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5916274785995483, Accuracy = 0.9121891856193542  
Iter #3809280: Learning rate = 0.001060: Batch Loss = 0.483687, Accuracy =

```
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5855780839920044, Accu
racy = 0.9141018986701965
Iter #3813376: Learning rate = 0.001060: Batch Loss = 0.477056, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5660417079925537, Accu
racy = 0.9215788841247559
Iter #3817472: Learning rate = 0.001060: Batch Loss = 0.519935, Accurac
y = 0.9453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5952285528182983, Accu
racy = 0.9127108454704285
Iter #3821568: Learning rate = 0.001060: Batch Loss = 0.542201, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5817620754241943, Accu
racy = 0.910971999168396
Iter #3825664: Learning rate = 0.001060: Batch Loss = 0.557058, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.6139352321624756, Accu
racy = 0.9027994871139526
Iter #3829760: Learning rate = 0.001060: Batch Loss = 0.506086, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5777825117111206, Accu
racy = 0.9147974252700806
Iter #3833856: Learning rate = 0.001060: Batch Loss = 0.473221, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5920391082763672, Accu
racy = 0.9067988395690918
Iter #3837952: Learning rate = 0.001060: Batch Loss = 0.518720, Accurac
y = 0.92578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5766373872756958, Accu
racy = 0.9106242656707764
Iter #3842048: Learning rate = 0.001060: Batch Loss = 0.490712, Accurac
y = 0.9375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5755591988563538, Accu
racy = 0.9160146117210388
Iter #3846144: Learning rate = 0.001060: Batch Loss = 0.525251, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5807737708091736, Accu
racy = 0.9052338600158691
Iter #3850240: Learning rate = 0.001060: Batch Loss = 0.512126, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5840578675270081, Accu
racy = 0.9196661710739136
Iter #3854336: Learning rate = 0.001060: Batch Loss = 0.472266, Accurac
y = 0.94921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5692307949066162, Accu
racy = 0.9172317981719971
Iter #3858432: Learning rate = 0.001060: Batch Loss = 0.494631, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5664543509483337, Accu
racy = 0.9128847122192383
Iter #3862528: Learning rate = 0.001060: Batch Loss = 0.512182, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5696609020233154, Accu
racy = 0.9121891856193542
Iter #3866624: Learning rate = 0.001060: Batch Loss = 0.489612, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5719882845878601, Accu
racy = 0.9146235585212708
Iter #3870720: Learning rate = 0.001060: Batch Loss = 0.526575, Accurac
y = 0.9375
```

PERFORMANCE ON TEST SET: Batch Loss = 0.5793415904045105, Accuracy = 0.9114936590194702  
Iter #3874816: Learning rate = 0.001060: Batch Loss = 0.490698, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5728042125701904, Accuracy = 0.9149712920188904  
Iter #3878912: Learning rate = 0.001060: Batch Loss = 0.523027, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5865359902381897, Accuracy = 0.915840744972229  
Iter #3883008: Learning rate = 0.001060: Batch Loss = 0.500639, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5680481791496277, Accuracy = 0.9127108454704285  
Iter #3887104: Learning rate = 0.001060: Batch Loss = 0.483208, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5643750429153442, Accuracy = 0.9167101383209229  
Iter #3891200: Learning rate = 0.001060: Batch Loss = 0.490765, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5704269409179688, Accuracy = 0.9137541055679321  
Iter #3895296: Learning rate = 0.001060: Batch Loss = 0.464651, Accuracy = 0.955078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5708049535751343, Accuracy = 0.910971999168396  
Iter #3899392: Learning rate = 0.001060: Batch Loss = 0.473993, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5923012495040894, Accuracy = 0.9048861265182495  
Iter #3903488: Learning rate = 0.001018: Batch Loss = 0.509412, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5895946025848389, Accuracy = 0.9066249132156372  
Iter #3907584: Learning rate = 0.001018: Batch Loss = 0.488422, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5835488438606262, Accuracy = 0.9132325053215027  
Iter #3911680: Learning rate = 0.001018: Batch Loss = 0.554234, Accuracy = 0.91015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6059345602989197, Accuracy = 0.9067988395690918  
Iter #3915776: Learning rate = 0.001018: Batch Loss = 0.522640, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6044797301292419, Accuracy = 0.9022778868675232  
Iter #3919872: Learning rate = 0.001018: Batch Loss = 0.502468, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5888908505439758, Accuracy = 0.9036689400672913  
Iter #3923968: Learning rate = 0.001018: Batch Loss = 0.540173, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6057010889053345, Accuracy = 0.903147280216217  
Iter #3928064: Learning rate = 0.001018: Batch Loss = 0.551580, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5667709112167358, Accuracy = 0.9104503393173218  
Iter #3932160: Learning rate = 0.001018: Batch Loss = 0.523546, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5925582051277161, Accuracy = 0.927734375

```
racy = 0.9113197922706604
Iter #3936256: Learning rate = 0.001018: Batch Loss = 0.504860, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.5824821591377258, Accu
racy = 0.9181011915206909
Iter #3940352: Learning rate = 0.001018: Batch Loss = 0.546157, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.581186830997467, Accur
acy = 0.9161884784698486
Iter #3944448: Learning rate = 0.001018: Batch Loss = 0.509426, Accurac
y = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5603655576705933, Accu
racy = 0.9175795316696167
Iter #3948544: Learning rate = 0.001018: Batch Loss = 0.470632, Accurac
y = 0.958984375
PERFORMANCE ON TEST SET: Batch Loss = 0.5676988363265991, Accu
racy = 0.916536271572113
Iter #3952640: Learning rate = 0.001018: Batch Loss = 0.505322, Accurac
y = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5792475938796997, Accu
racy = 0.9167101383209229
Iter #3956736: Learning rate = 0.001018: Batch Loss = 0.501466, Accurac
y = 0.939453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5916540622711182, Accu
racy = 0.9144496321678162
Iter #3960832: Learning rate = 0.001018: Batch Loss = 0.478218, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET: Batch Loss = 0.5982575416564941, Accu
racy = 0.9111458659172058
Iter #3964928: Learning rate = 0.001018: Batch Loss = 0.470507, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET: Batch Loss = 0.5904977917671204, Accu
racy = 0.9074943661689758
Iter #3969024: Learning rate = 0.001018: Batch Loss = 0.467743, Accurac
y = 0.958984375
PERFORMANCE ON TEST SET: Batch Loss = 0.6039277911186218, Accu
racy = 0.9043644666671753
Iter #3973120: Learning rate = 0.001018: Batch Loss = 0.514270, Accurac
y = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.5740876793861389, Accu
racy = 0.9127108454704285
Iter #3977216: Learning rate = 0.001018: Batch Loss = 0.488803, Accurac
y = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5697535872459412, Accu
racy = 0.915840744972229
Iter #3981312: Learning rate = 0.001018: Batch Loss = 0.517587, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.5509692430496216, Accu
racy = 0.9214049577713013
Iter #3985408: Learning rate = 0.001018: Batch Loss = 0.480215, Accurac
y = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5704783201217651, Accu
racy = 0.9186228513717651
Iter #3989504: Learning rate = 0.001018: Batch Loss = 0.474661, Accurac
y = 0.95703125
PERFORMANCE ON TEST SET: Batch Loss = 0.5625893473625183, Accu
racy = 0.9212310910224915
Iter #3993600: Learning rate = 0.001018: Batch Loss = 0.487104, Accurac
y = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.5552747249603271, Accu
racy = 0.915840744972229
```

Iter #3997696: Learning rate = 0.001018: Batch Loss = 0.517864, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5671321749687195, Accuracy = 0.9168840050697327  
Iter #4001792: Learning rate = 0.000977: Batch Loss = 0.496245, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5666284561157227, Accuracy = 0.9241871237754822  
Iter #4005888: Learning rate = 0.000977: Batch Loss = 0.469472, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5680243968963623, Accuracy = 0.9179273247718811  
Iter #4009984: Learning rate = 0.000977: Batch Loss = 0.514608, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5591322779655457, Accuracy = 0.9219266176223755  
Iter #4014080: Learning rate = 0.000977: Batch Loss = 0.513972, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5634260177612305, Accuracy = 0.9149712920188904  
Iter #4018176: Learning rate = 0.000977: Batch Loss = 0.506427, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5717043280601501, Accuracy = 0.9252303838729858  
Iter #4022272: Learning rate = 0.000977: Batch Loss = 0.491345, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.556774377822876, Accuracy = 0.9141018986701965  
Iter #4026368: Learning rate = 0.000977: Batch Loss = 0.511068, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5791484713554382, Accuracy = 0.9074943661689758  
Iter #4030464: Learning rate = 0.000977: Batch Loss = 0.456077, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6205611228942871, Accuracy = 0.9034950733184814  
Iter #4034560: Learning rate = 0.000977: Batch Loss = 0.515707, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.562319278717041, Accuracy = 0.918796718120575  
Iter #4038656: Learning rate = 0.000977: Batch Loss = 0.553960, Accuracy = 0.916015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6033790111541748, Accuracy = 0.8937575817108154  
Iter #4042752: Learning rate = 0.000977: Batch Loss = 0.496978, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5645890235900879, Accuracy = 0.915840744972229  
Iter #4046848: Learning rate = 0.000977: Batch Loss = 0.492548, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5753213763237, Accuracy = 0.9193183779716492  
Iter #4050944: Learning rate = 0.000977: Batch Loss = 0.476997, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5650576949119568, Accuracy = 0.9163623452186584  
Iter #4055040: Learning rate = 0.000977: Batch Loss = 0.565195, Accuracy = 0.896484375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5744633674621582, Accuracy = 0.9106242656707764  
Iter #4059136: Learning rate = 0.000977: Batch Loss = 0.489146, Accuracy =

```
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5699996948242188, Accu
racy = 0.919492244720459
Iter #4063232: Learning rate = 0.000977:  Batch Loss = 0.552475, Accurac
y = 0.916015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5783556699752808, Accu
racy = 0.9121891856193542
Iter #4067328: Learning rate = 0.000977:  Batch Loss = 0.462858, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5792312622070312, Accu
racy = 0.9118413925170898
Iter #4071424: Learning rate = 0.000977:  Batch Loss = 0.498048, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5627503395080566, Accu
racy = 0.9149712920188904
Iter #4075520: Learning rate = 0.000977:  Batch Loss = 0.498695, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5593833923339844, Accu
racy = 0.9172317981719971
Iter #4079616: Learning rate = 0.000977:  Batch Loss = 0.445152, Accurac
y = 0.958984375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5573114156723022, Accu
racy = 0.9217527508735657
Iter #4083712: Learning rate = 0.000977:  Batch Loss = 0.448480, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5485256910324097, Accu
racy = 0.920187771320343
Iter #4087808: Learning rate = 0.000977:  Batch Loss = 0.482434, Accurac
y = 0.9453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5692552328109741, Accu
racy = 0.9221004843711853
Iter #4091904: Learning rate = 0.000977:  Batch Loss = 0.493700, Accurac
y = 0.9375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5610412359237671, Accu
racy = 0.9245348572731018
Iter #4096000: Learning rate = 0.000977:  Batch Loss = 0.461787, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5554791688919067, Accu
racy = 0.9170579314231873
Iter #4100096: Learning rate = 0.000938:  Batch Loss = 0.496712, Accurac
y = 0.9375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5516250729560852, Accu
racy = 0.9219266176223755
Iter #4104192: Learning rate = 0.000938:  Batch Loss = 0.443448, Accurac
y = 0.966796875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5797591805458069, Accu
racy = 0.9141018986701965
Iter #4108288: Learning rate = 0.000938:  Batch Loss = 0.494324, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5669769048690796, Accu
racy = 0.9142757654190063
Iter #4112384: Learning rate = 0.000938:  Batch Loss = 0.525183, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5832394361495972, Accu
racy = 0.9057555198669434
Iter #4116480: Learning rate = 0.000938:  Batch Loss = 0.511002, Accurac
y = 0.939453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5730434060096741, Accu
racy = 0.9179273247718811
Iter #4120576: Learning rate = 0.000938:  Batch Loss = 0.457776, Accurac
y = 0.953125
```

PERFORMANCE ON TEST SET: Batch Loss = 0.5678778886795044, Accuracy = 0.9156668186187744  
Iter #4124672: Learning rate = 0.000938: Batch Loss = 0.459090, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5642760992050171, Accuracy = 0.9160146117210388  
Iter #4128768: Learning rate = 0.000938: Batch Loss = 0.477837, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5582672357559204, Accuracy = 0.9156668186187744  
Iter #4132864: Learning rate = 0.000938: Batch Loss = 0.462331, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.566373884677887, Accuracy = 0.9177534580230713  
Iter #4136960: Learning rate = 0.000938: Batch Loss = 0.519280, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.554519534111023, Accuracy = 0.9193183779716492  
Iter #4141056: Learning rate = 0.000938: Batch Loss = 0.463639, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5544813871383667, Accuracy = 0.9184489846229553  
Iter #4145152: Learning rate = 0.000938: Batch Loss = 0.503228, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5601391792297363, Accuracy = 0.9182750582695007  
Iter #4149248: Learning rate = 0.000938: Batch Loss = 0.495492, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5759526491165161, Accuracy = 0.9104503393173218  
Iter #4153344: Learning rate = 0.000938: Batch Loss = 0.499364, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5844981074333191, Accuracy = 0.9196661710739136  
Iter #4157440: Learning rate = 0.000938: Batch Loss = 0.512110, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5866352319717407, Accuracy = 0.9101026058197021  
Iter #4161536: Learning rate = 0.000938: Batch Loss = 0.497277, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5842663049697876, Accuracy = 0.9149712920188904  
Iter #4165632: Learning rate = 0.000938: Batch Loss = 0.443613, Accuracy = 0.962890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5652750134468079, Accuracy = 0.9123630523681641  
Iter #4169728: Learning rate = 0.000938: Batch Loss = 0.509349, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5558255910873413, Accuracy = 0.9179273247718811  
Iter #4173824: Learning rate = 0.000938: Batch Loss = 0.490383, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5595437288284302, Accuracy = 0.9085376262664795  
Iter #4177920: Learning rate = 0.000938: Batch Loss = 0.526735, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5878417491912842, Accuracy = 0.9055816531181335  
Iter #4182016: Learning rate = 0.000938: Batch Loss = 0.467744, Accuracy = 0.955078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5583495497703552, Accuracy = 0.955078125

```
racy = 0.9156668186187744
Iter #4186112: Learning rate = 0.000938: Batch Loss = 0.463898, Accuracy = 0.962890625
PERFORMANCE ON TEST SET: Batch Loss = 0.5593214631080627, Accuracy = 0.9146235585212708
Iter #4190208: Learning rate = 0.000938: Batch Loss = 0.503346, Accuracy = 0.939453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5539811849594116, Accuracy = 0.9174056649208069
Iter #4194304: Learning rate = 0.000938: Batch Loss = 0.493113, Accuracy = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.5574874877929688, Accuracy = 0.9238393306732178
Iter #4198400: Learning rate = 0.000938: Batch Loss = 0.447862, Accuracy = 0.95703125
PERFORMANCE ON TEST SET: Batch Loss = 0.5538020133972168, Accuracy = 0.9177534580230713
Iter #4202496: Learning rate = 0.000900: Batch Loss = 0.467529, Accuracy = 0.955078125
PERFORMANCE ON TEST SET: Batch Loss = 0.5383772253990173, Accuracy = 0.922622144222595
Iter #4206592: Learning rate = 0.000900: Batch Loss = 0.480320, Accuracy = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5558720231056213, Accuracy = 0.9191445112228394
Iter #4210688: Learning rate = 0.000900: Batch Loss = 0.460343, Accuracy = 0.953125
PERFORMANCE ON TEST SET: Batch Loss = 0.5680951476097107, Accuracy = 0.9107981324195862
Iter #4214784: Learning rate = 0.000900: Batch Loss = 0.464386, Accuracy = 0.953125
PERFORMANCE ON TEST SET: Batch Loss = 0.5647702217102051, Accuracy = 0.9134063720703125
Iter #4218880: Learning rate = 0.000900: Batch Loss = 0.472827, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5576097369194031, Accuracy = 0.9127108454704285
Iter #4222976: Learning rate = 0.000900: Batch Loss = 0.472966, Accuracy = 0.9453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5344207286834717, Accuracy = 0.9224482774734497
Iter #4227072: Learning rate = 0.000900: Batch Loss = 0.482201, Accuracy = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.5499154329299927, Accuracy = 0.9257520437240601
Iter #4231168: Learning rate = 0.000900: Batch Loss = 0.467960, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.5599260926246643, Accuracy = 0.9193183779716492
Iter #4235264: Learning rate = 0.000900: Batch Loss = 0.467116, Accuracy = 0.94140625
PERFORMANCE ON TEST SET: Batch Loss = 0.549776017665863, Accuracy = 0.9181011915206909
Iter #4239360: Learning rate = 0.000900: Batch Loss = 0.475838, Accuracy = 0.94140625
PERFORMANCE ON TEST SET: Batch Loss = 0.5600163340568542, Accuracy = 0.9154929518699646
Iter #4243456: Learning rate = 0.000900: Batch Loss = 0.471235, Accuracy = 0.951171875
PERFORMANCE ON TEST SET: Batch Loss = 0.5748817324638367, Accuracy = 0.918796718120575
```



Iter #4247552: Learning rate = 0.000900: Batch Loss = 0.469328, Accuracy = 0.955078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5631284117698669, Accuracy = 0.9224482774734497  
Iter #4251648: Learning rate = 0.000900: Batch Loss = 0.505420, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5558866262435913, Accuracy = 0.9146235585212708  
Iter #4255744: Learning rate = 0.000900: Batch Loss = 0.483889, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5598117709159851, Accuracy = 0.9128847122192383  
Iter #4259840: Learning rate = 0.000900: Batch Loss = 0.474291, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5520081520080566, Accuracy = 0.9137541055679321  
Iter #4263936: Learning rate = 0.000900: Batch Loss = 0.479487, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5493390560150146, Accuracy = 0.9200139045715332  
Iter #4268032: Learning rate = 0.000900: Batch Loss = 0.468505, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5574247241020203, Accuracy = 0.9172317981719971  
Iter #4272128: Learning rate = 0.000900: Batch Loss = 0.491057, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5600511431694031, Accuracy = 0.916536271572113  
Iter #4276224: Learning rate = 0.000900: Batch Loss = 0.459491, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5835326910018921, Accuracy = 0.9022778868675232  
Iter #4280320: Learning rate = 0.000900: Batch Loss = 0.477341, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5516275763511658, Accuracy = 0.9217527508735657  
Iter #4284416: Learning rate = 0.000900: Batch Loss = 0.455505, Accuracy = 0.958984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5500131845474243, Accuracy = 0.919492244720459  
Iter #4288512: Learning rate = 0.000900: Batch Loss = 0.474048, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.570388913154602, Accuracy = 0.9099286794662476  
Iter #4292608: Learning rate = 0.000900: Batch Loss = 0.537482, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5533510446548462, Accuracy = 0.915840744972229  
Iter #4296704: Learning rate = 0.000900: Batch Loss = 0.477010, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5577226877212524, Accuracy = 0.9241871237754822  
Iter #4300800: Learning rate = 0.000864: Batch Loss = 0.455799, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5418434143066406, Accuracy = 0.924360990524292  
Iter #4304896: Learning rate = 0.000864: Batch Loss = 0.490865, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5732027292251587, Accuracy = 0.915840744972229  
Iter #4308992: Learning rate = 0.000864: Batch Loss = 0.469841, Accuracy =

y = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5492960810661316, Accuracy = 0.9196661710739136  
Iter #4313088: Learning rate = 0.000864: Batch Loss = 0.481547, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5482841730117798, Accuracy = 0.9222744107246399  
Iter #4317184: Learning rate = 0.000864: Batch Loss = 0.438964, Accuracy = 0.9609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5494326949119568, Accuracy = 0.9231438040733337  
Iter #4321280: Learning rate = 0.000864: Batch Loss = 0.507520, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5405603647232056, Accuracy = 0.923665463924408  
Iter #4325376: Learning rate = 0.000864: Batch Loss = 0.435824, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5295476913452148, Accuracy = 0.9266214370727539  
Iter #4329472: Learning rate = 0.000864: Batch Loss = 0.514426, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5568839311599731, Accuracy = 0.9219266176223755  
Iter #4333568: Learning rate = 0.000864: Batch Loss = 0.507056, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.559921145439148, Accuracy = 0.9127108454704285  
Iter #4337664: Learning rate = 0.000864: Batch Loss = 0.477629, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5568485856056213, Accuracy = 0.9170579314231873  
Iter #4341760: Learning rate = 0.000864: Batch Loss = 0.473875, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5391548871994019, Accuracy = 0.9231438040733337  
Iter #4345856: Learning rate = 0.000864: Batch Loss = 0.503937, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5642836093902588, Accuracy = 0.9167101383209229  
Iter #4349952: Learning rate = 0.000864: Batch Loss = 0.452316, Accuracy = 0.95703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.542680025100708, Accuracy = 0.9212310910224915  
Iter #4354048: Learning rate = 0.000864: Batch Loss = 0.443773, Accuracy = 0.958984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5362288951873779, Accuracy = 0.9259259104728699  
Iter #4358144: Learning rate = 0.000864: Batch Loss = 0.488581, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5560083389282227, Accuracy = 0.9193183779716492  
Iter #4362240: Learning rate = 0.000864: Batch Loss = 0.463518, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5660765767097473, Accuracy = 0.9203616976737976  
Iter #4366336: Learning rate = 0.000864: Batch Loss = 0.501694, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5572161674499512, Accuracy = 0.9144496321678162  
Iter #4370432: Learning rate = 0.000864: Batch Loss = 0.466209, Accuracy = 0.953125

PERFORMANCE ON TEST SET: Batch Loss = 0.576198160648346, Accuracy = 0.9156668186187744  
Iter #4374528: Learning rate = 0.000864: Batch Loss = 0.461406, Accuracy = 0.95703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5400720834732056, Accuracy = 0.9229699373245239  
Iter #4378624: Learning rate = 0.000864: Batch Loss = 0.487341, Accuracy = 0.96484375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5385991334915161, Accuracy = 0.9198400378227234  
Iter #4382720: Learning rate = 0.000864: Batch Loss = 0.496909, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5533068180084229, Accuracy = 0.919492244720459  
Iter #4386816: Learning rate = 0.000864: Batch Loss = 0.470061, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5823906660079956, Accuracy = 0.9135802388191223  
Iter #4390912: Learning rate = 0.000864: Batch Loss = 0.485883, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5549051761627197, Accuracy = 0.9144496321678162  
Iter #4395008: Learning rate = 0.000864: Batch Loss = 0.498014, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5490691661834717, Accuracy = 0.915145218372345  
Iter #4399104: Learning rate = 0.000864: Batch Loss = 0.474570, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5821142196655273, Accuracy = 0.9147974252700806  
Iter #4403200: Learning rate = 0.000830: Batch Loss = 0.469015, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.548109233379364, Accuracy = 0.9245348572731018  
Iter #4407296: Learning rate = 0.000830: Batch Loss = 0.479192, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5505634546279907, Accuracy = 0.9200139045715332  
Iter #4411392: Learning rate = 0.000830: Batch Loss = 0.468811, Accuracy = 0.9609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5382132530212402, Accuracy = 0.9248826503753662  
Iter #4415488: Learning rate = 0.000830: Batch Loss = 0.455586, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5798559188842773, Accuracy = 0.9147974252700806  
Iter #4419584: Learning rate = 0.000830: Batch Loss = 0.497618, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5659564137458801, Accuracy = 0.9196661710739136  
Iter #4423680: Learning rate = 0.000830: Batch Loss = 0.542706, Accuracy = 0.904296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5456240177154541, Accuracy = 0.9177534580230713  
Iter #4427776: Learning rate = 0.000830: Batch Loss = 0.503307, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5490056872367859, Accuracy = 0.9127108454704285  
Iter #4431872: Learning rate = 0.000830: Batch Loss = 0.462399, Accuracy = 0.95703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5476162433624268, Accuracy = 0.9127108454704285

```
racy = 0.9234915375709534
Iter #4435968: Learning rate = 0.000830: Batch Loss = 0.438090, Accuracy = 0.958984375
PERFORMANCE ON TEST SET: Batch Loss = 0.5641912817955017, Accuracy = 0.9186228513717651
Iter #4440064: Learning rate = 0.000830: Batch Loss = 0.503878, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5494057536125183, Accuracy = 0.9207094311714172
Iter #4444160: Learning rate = 0.000830: Batch Loss = 0.500298, Accuracy = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.568938136100769, Accuracy = 0.9073204398155212
Iter #4448256: Learning rate = 0.000830: Batch Loss = 0.445726, Accuracy = 0.962890625
PERFORMANCE ON TEST SET: Batch Loss = 0.554344654083252, Accuracy = 0.915840744972229
Iter #4452352: Learning rate = 0.000830: Batch Loss = 0.500116, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5438268780708313, Accuracy = 0.9233176708221436
Iter #4456448: Learning rate = 0.000830: Batch Loss = 0.443480, Accuracy = 0.953125
PERFORMANCE ON TEST SET: Batch Loss = 0.5415405631065369, Accuracy = 0.9234915375709534
Iter #4460544: Learning rate = 0.000830: Batch Loss = 0.469376, Accuracy = 0.9453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5382788777351379, Accuracy = 0.9210572242736816
Iter #4464640: Learning rate = 0.000830: Batch Loss = 0.456989, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5342342853546143, Accuracy = 0.9248826503753662
Iter #4468736: Learning rate = 0.000830: Batch Loss = 0.445953, Accuracy = 0.96484375
PERFORMANCE ON TEST SET: Batch Loss = 0.5503368377685547, Accuracy = 0.924360990524292
Iter #4472832: Learning rate = 0.000830: Batch Loss = 0.446963, Accuracy = 0.958984375
PERFORMANCE ON TEST SET: Batch Loss = 0.542749285697937, Accuracy = 0.9186228513717651
Iter #4476928: Learning rate = 0.000830: Batch Loss = 0.454820, Accuracy = 0.9453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5312042832374573, Accuracy = 0.9248826503753662
Iter #4481024: Learning rate = 0.000830: Batch Loss = 0.446911, Accuracy = 0.962890625
PERFORMANCE ON TEST SET: Batch Loss = 0.5349898338317871, Accuracy = 0.9238393306732178
Iter #4485120: Learning rate = 0.000830: Batch Loss = 0.446361, Accuracy = 0.951171875
PERFORMANCE ON TEST SET: Batch Loss = 0.5510067343711853, Accuracy = 0.9227960109710693
Iter #4489216: Learning rate = 0.000830: Batch Loss = 0.438043, Accuracy = 0.95703125
PERFORMANCE ON TEST SET: Batch Loss = 0.5528084635734558, Accuracy = 0.9177534580230713
Iter #4493312: Learning rate = 0.000830: Batch Loss = 0.419948, Accuracy = 0.9765625
PERFORMANCE ON TEST SET: Batch Loss = 0.5533972382545471, Accuracy = 0.9248826503753662
```

Iter #4497408: Learning rate = 0.000830: Batch Loss = 0.478398, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5499640703201294, Accuracy = 0.9215788841247559  
Iter #4501504: Learning rate = 0.000796: Batch Loss = 0.447366, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5413095951080322, Accuracy = 0.923665463924408  
Iter #4505600: Learning rate = 0.000796: Batch Loss = 0.462827, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5464247465133667, Accuracy = 0.9245348572731018  
Iter #4509696: Learning rate = 0.000796: Batch Loss = 0.443897, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5511200428009033, Accuracy = 0.9198400378227234  
Iter #4513792: Learning rate = 0.000796: Batch Loss = 0.471315, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5488075017929077, Accuracy = 0.9184489846229553  
Iter #4517888: Learning rate = 0.000796: Batch Loss = 0.450064, Accuracy = 0.95703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5387152433395386, Accuracy = 0.9241871237754822  
Iter #4521984: Learning rate = 0.000796: Batch Loss = 0.450191, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5455361604690552, Accuracy = 0.9233176708221436  
Iter #4526080: Learning rate = 0.000796: Batch Loss = 0.447551, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5431615710258484, Accuracy = 0.9226221442222595  
Iter #4530176: Learning rate = 0.000796: Batch Loss = 0.437191, Accuracy = 0.9609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5321491360664368, Accuracy = 0.9248826503753662  
Iter #4534272: Learning rate = 0.000796: Batch Loss = 1.362633, Accuracy = 0.71484375  
PERFORMANCE ON TEST SET: Batch Loss = 1.6188602447509766, Accuracy = 0.6600590944290161  
Iter #4538368: Learning rate = 0.000796: Batch Loss = 1.099899, Accuracy = 0.73828125  
PERFORMANCE ON TEST SET: Batch Loss = 1.1506736278533936, Accuracy = 0.7287428379058838  
Iter #4542464: Learning rate = 0.000796: Batch Loss = 1.030045, Accuracy = 0.7421875  
PERFORMANCE ON TEST SET: Batch Loss = 1.0358723402023315, Accuracy = 0.7254390716552734  
Iter #4546560: Learning rate = 0.000796: Batch Loss = 0.994991, Accuracy = 0.783203125  
PERFORMANCE ON TEST SET: Batch Loss = 0.9400484561920166, Accuracy = 0.7643887996673584  
Iter #4550656: Learning rate = 0.000796: Batch Loss = 0.996321, Accuracy = 0.7578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.9156200289726257, Accuracy = 0.7741262316703796  
Iter #4554752: Learning rate = 0.000796: Batch Loss = 0.905907, Accuracy = 0.794921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.9263104200363159, Accuracy = 0.7734307050704956  
Iter #4558848: Learning rate = 0.000796: Batch Loss = 0.954929, Accuracy =

```
y = 0.78125
PERFORMANCE ON TEST SET:          Batch Loss = 0.8991730213165283, Accu
racy = 0.7788210511207581
Iter #4562944: Learning rate = 0.000796: Batch Loss = 0.948262, Accurac
y = 0.763671875
PERFORMANCE ON TEST SET:          Batch Loss = 0.9072445034980774, Accu
racy = 0.7715179920196533
Iter #4567040: Learning rate = 0.000796: Batch Loss = 0.922762, Accurac
y = 0.8046875
PERFORMANCE ON TEST SET:          Batch Loss = 0.9098650217056274, Accu
racy = 0.7709963321685791
Iter #4571136: Learning rate = 0.000796: Batch Loss = 0.843883, Accurac
y = 0.810546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.8954111337661743, Accu
racy = 0.781603217124939
Iter #4575232: Learning rate = 0.000796: Batch Loss = 0.866315, Accurac
y = 0.818359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.8856645226478577, Accu
racy = 0.7758650779724121
Iter #4579328: Learning rate = 0.000796: Batch Loss = 0.858496, Accurac
y = 0.798828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.8826955556869507, Accu
racy = 0.7836897969245911
Iter #4583424: Learning rate = 0.000796: Batch Loss = 0.891273, Accurac
y = 0.771484375
PERFORMANCE ON TEST SET:          Batch Loss = 0.886574387550354, Accur
acy = 0.7878629565238953
Iter #4587520: Learning rate = 0.000796: Batch Loss = 0.921406, Accurac
y = 0.779296875
PERFORMANCE ON TEST SET:          Batch Loss = 0.8555097579956055, Accu
racy = 0.7965571284294128
Iter #4591616: Learning rate = 0.000796: Batch Loss = 0.868357, Accurac
y = 0.79296875
PERFORMANCE ON TEST SET:          Batch Loss = 0.8606282472610474, Accu
racy = 0.7955138087272644
Iter #4595712: Learning rate = 0.000796: Batch Loss = 0.823871, Accurac
y = 0.80859375
PERFORMANCE ON TEST SET:          Batch Loss = 0.8292033672332764, Accu
racy = 0.8036863207817078
Iter #4599808: Learning rate = 0.000796: Batch Loss = 0.838623, Accurac
y = 0.822265625
PERFORMANCE ON TEST SET:          Batch Loss = 0.8319334387779236, Accu
racy = 0.803512454032898
Iter #4603904: Learning rate = 0.000765: Batch Loss = 0.815590, Accurac
y = 0.828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.8276984691619873, Accu
racy = 0.8054251670837402
Iter #4608000: Learning rate = 0.000765: Batch Loss = 0.802195, Accurac
y = 0.826171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.8275986313819885, Accu
racy = 0.7976003885269165
Iter #4612096: Learning rate = 0.000765: Batch Loss = 0.807894, Accurac
y = 0.8359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.8186365365982056, Accu
racy = 0.8043818473815918
Iter #4616192: Learning rate = 0.000765: Batch Loss = 0.737761, Accurac
y = 0.853515625
PERFORMANCE ON TEST SET:          Batch Loss = 0.8145201206207275, Accu
racy = 0.8113371729850769
Iter #4620288: Learning rate = 0.000765: Batch Loss = 0.782507, Accurac
y = 0.830078125
```

PERFORMANCE ON TEST SET: Batch Loss = 0.810928225517273, Accuracy = 0.8073378801345825  
Iter #4624384: Learning rate = 0.000765: Batch Loss = 0.755398, Accuracy = 0.8515625  
PERFORMANCE ON TEST SET: Batch Loss = 0.8225899934768677, Accuracy = 0.8073378801345825  
Iter #4628480: Learning rate = 0.000765: Batch Loss = 0.769866, Accuracy = 0.830078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.8451434373855591, Accuracy = 0.8095983266830444  
Iter #4632576: Learning rate = 0.000765: Batch Loss = 0.817635, Accuracy = 0.80859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8131140470504761, Accuracy = 0.8122065663337708  
Iter #4636672: Learning rate = 0.000765: Batch Loss = 0.739945, Accuracy = 0.841796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.795320987701416, Accuracy = 0.8155103325843811  
Iter #4640768: Learning rate = 0.000765: Batch Loss = 0.808631, Accuracy = 0.83203125  
PERFORMANCE ON TEST SET: Batch Loss = 0.8348578810691833, Accuracy = 0.8132498860359192  
Iter #4644864: Learning rate = 0.000765: Batch Loss = 0.720791, Accuracy = 0.86328125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7979445457458496, Accuracy = 0.8122065663337708  
Iter #4648960: Learning rate = 0.000765: Batch Loss = 0.772445, Accuracy = 0.84375  
PERFORMANCE ON TEST SET: Batch Loss = 0.794443666934967, Accuracy = 0.8170753121376038  
Iter #4653056: Learning rate = 0.000765: Batch Loss = 0.725579, Accuracy = 0.83984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7886669635772705, Accuracy = 0.8149886727333069  
Iter #4657152: Learning rate = 0.000765: Batch Loss = 0.709997, Accuracy = 0.86328125  
PERFORMANCE ON TEST SET: Batch Loss = 0.795585036277771, Accuracy = 0.8111632466316223  
Iter #4661248: Learning rate = 0.000765: Batch Loss = 0.739750, Accuracy = 0.85546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7844550609588623, Accuracy = 0.8132498860359192  
Iter #4665344: Learning rate = 0.000765: Batch Loss = 0.784835, Accuracy = 0.83984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7797808647155762, Accuracy = 0.8177708387374878  
Iter #4669440: Learning rate = 0.000765: Batch Loss = 0.706598, Accuracy = 0.857421875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7863715887069702, Accuracy = 0.8198574185371399  
Iter #4673536: Learning rate = 0.000765: Batch Loss = 0.744913, Accuracy = 0.8359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7941055297851562, Accuracy = 0.8198574185371399  
Iter #4677632: Learning rate = 0.000765: Batch Loss = 0.805680, Accuracy = 0.818359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8273164629936218, Accuracy = 0.8073378801345825  
Iter #4681728: Learning rate = 0.000765: Batch Loss = 0.767384, Accuracy = 0.845703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7839395999908447, Accuracy =

```
racy = 0.8191618919372559
Iter #4685824: Learning rate = 0.000765: Batch Loss = 0.785818, Accuracy = 0.822265625
PERFORMANCE ON TEST SET: Batch Loss = 0.7805670499801636, Accuracy = 0.8163797855377197
Iter #4689920: Learning rate = 0.000765: Batch Loss = 0.729580, Accuracy = 0.8359375
PERFORMANCE ON TEST SET: Batch Loss = 0.7794637680053711, Accuracy = 0.822639524936676
Iter #4694016: Learning rate = 0.000765: Batch Loss = 0.741926, Accuracy = 0.853515625
PERFORMANCE ON TEST SET: Batch Loss = 0.7748628854751587, Accuracy = 0.8240305781364441
Iter #4698112: Learning rate = 0.000765: Batch Loss = 0.778430, Accuracy = 0.826171875
PERFORMANCE ON TEST SET: Batch Loss = 0.7982355356216431, Accuracy = 0.8221178650856018
Iter #4702208: Learning rate = 0.000734: Batch Loss = 0.774763, Accuracy = 0.818359375
PERFORMANCE ON TEST SET: Batch Loss = 0.7883341312408447, Accuracy = 0.8202051520347595
Iter #4706304: Learning rate = 0.000734: Batch Loss = 0.739119, Accuracy = 0.849609375
PERFORMANCE ON TEST SET: Batch Loss = 0.7707173824310303, Accuracy = 0.8250738978385925
Iter #4710400: Learning rate = 0.000734: Batch Loss = 0.767631, Accuracy = 0.83984375
PERFORMANCE ON TEST SET: Batch Loss = 0.7721487283706665, Accuracy = 0.8228134512901306
Iter #4714496: Learning rate = 0.000734: Batch Loss = 0.728932, Accuracy = 0.84375
PERFORMANCE ON TEST SET: Batch Loss = 0.7888742685317993, Accuracy = 0.8202051520347595
Iter #4718592: Learning rate = 0.000734: Batch Loss = 0.741437, Accuracy = 0.8359375
PERFORMANCE ON TEST SET: Batch Loss = 0.7747389674186707, Accuracy = 0.8240305781364441
Iter #4722688: Learning rate = 0.000734: Batch Loss = 0.715533, Accuracy = 0.84375
PERFORMANCE ON TEST SET: Batch Loss = 0.7704320549964905, Accuracy = 0.8245522379875183
Iter #4726784: Learning rate = 0.000734: Batch Loss = 0.684764, Accuracy = 0.8671875
PERFORMANCE ON TEST SET: Batch Loss = 0.7720565795898438, Accuracy = 0.821943998336792
Iter #4730880: Learning rate = 0.000734: Batch Loss = 0.766628, Accuracy = 0.828125
PERFORMANCE ON TEST SET: Batch Loss = 0.7768455743789673, Accuracy = 0.827508270740509
Iter #4734976: Learning rate = 0.000734: Batch Loss = 0.748268, Accuracy = 0.859375
PERFORMANCE ON TEST SET: Batch Loss = 0.7725459933280945, Accuracy = 0.822639524936676
Iter #4739072: Learning rate = 0.000734: Batch Loss = 0.803308, Accuracy = 0.822265625
PERFORMANCE ON TEST SET: Batch Loss = 0.7675148844718933, Accuracy = 0.8254216909408569
Iter #4743168: Learning rate = 0.000734: Batch Loss = 0.697662, Accuracy = 0.8515625
PERFORMANCE ON TEST SET: Batch Loss = 0.7641931772232056, Accuracy = 0.826812744140625
```



Iter #4747264: Learning rate = 0.000734: Batch Loss = 0.721783, Accuracy = 0.857421875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7756916284561157, Accuracy = 0.822639524936676  
Iter #4751360: Learning rate = 0.000734: Batch Loss = 0.716530, Accuracy = 0.865234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8062754273414612, Accuracy = 0.8210746049880981  
Iter #4755456: Learning rate = 0.000734: Batch Loss = 0.756326, Accuracy = 0.84375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7935547232627869, Accuracy = 0.8160319924354553  
Iter #4759552: Learning rate = 0.000734: Batch Loss = 0.766148, Accuracy = 0.83984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.8008389472961426, Accuracy = 0.8193357586860657  
Iter #4763648: Learning rate = 0.000734: Batch Loss = 0.712250, Accuracy = 0.84375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7630364894866943, Accuracy = 0.8250738978385925  
Iter #4767744: Learning rate = 0.000734: Batch Loss = 0.764291, Accuracy = 0.837890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.7802333831787109, Accuracy = 0.8280299305915833  
Iter #4771840: Learning rate = 0.000734: Batch Loss = 0.692447, Accuracy = 0.849609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.768783688545227, Accuracy = 0.821943998336792  
Iter #4775936: Learning rate = 0.000734: Batch Loss = 0.762078, Accuracy = 0.833984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7674788236618042, Accuracy = 0.8231611847877502  
Iter #4780032: Learning rate = 0.000734: Batch Loss = 0.647502, Accuracy = 0.8828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7614582180976868, Accuracy = 0.8287254571914673  
Iter #4784128: Learning rate = 0.000734: Batch Loss = 0.678579, Accuracy = 0.86328125  
PERFORMANCE ON TEST SET: Batch Loss = 0.761905312538147, Accuracy = 0.8316814303398132  
Iter #4788224: Learning rate = 0.000734: Batch Loss = 0.735492, Accuracy = 0.84375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7764040231704712, Accuracy = 0.822639524936676  
Iter #4792320: Learning rate = 0.000734: Batch Loss = 0.734019, Accuracy = 0.8359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7747718095779419, Accuracy = 0.821248471736908  
Iter #4796416: Learning rate = 0.000734: Batch Loss = 0.678195, Accuracy = 0.873046875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7701963186264038, Accuracy = 0.8245522379875183  
Iter #4800512: Learning rate = 0.000705: Batch Loss = 0.703270, Accuracy = 0.8515625  
PERFORMANCE ON TEST SET: Batch Loss = 0.807052731513977, Accuracy = 0.8236828446388245  
Iter #4804608: Learning rate = 0.000705: Batch Loss = 0.739412, Accuracy = 0.84375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7669789791107178, Accuracy = 0.822639524936676  
Iter #4808704: Learning rate = 0.000705: Batch Loss = 0.770345, Accuracy =

```
y = 0.82421875
PERFORMANCE ON TEST SET:          Batch Loss = 0.7636939287185669, Accu
racy = 0.8243783712387085
Iter #4812800: Learning rate = 0.000705: Batch Loss = 0.637461, Accurac
y = 0.89453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.7510630488395691, Accu
racy = 0.8339419364929199
Iter #4816896: Learning rate = 0.000705: Batch Loss = 0.717419, Accurac
y = 0.859375
PERFORMANCE ON TEST SET:          Batch Loss = 0.7559281587600708, Accu
racy = 0.8299426436424255
Iter #4820992: Learning rate = 0.000705: Batch Loss = 0.738705, Accurac
y = 0.84765625
PERFORMANCE ON TEST SET:          Batch Loss = 0.7563807368278503, Accu
racy = 0.8299426436424255
Iter #4825088: Learning rate = 0.000705: Batch Loss = 0.697093, Accurac
y = 0.8671875
PERFORMANCE ON TEST SET:          Batch Loss = 0.7409878969192505, Accu
racy = 0.8341158032417297
Iter #4829184: Learning rate = 0.000705: Batch Loss = 0.731028, Accurac
y = 0.84765625
PERFORMANCE ON TEST SET:          Batch Loss = 0.764824390411377, Accur
acy = 0.8313336968421936
Iter #4833280: Learning rate = 0.000705: Batch Loss = 0.723787, Accurac
y = 0.841796875
PERFORMANCE ON TEST SET:          Batch Loss = 0.7532138228416443, Accu
racy = 0.829768717288971
Iter #4837376: Learning rate = 0.000705: Batch Loss = 0.728041, Accurac
y = 0.84375
PERFORMANCE ON TEST SET:          Batch Loss = 0.7487767934799194, Accu
racy = 0.835332989692688
Iter #4841472: Learning rate = 0.000705: Batch Loss = 0.762303, Accurac
y = 0.833984375
PERFORMANCE ON TEST SET:          Batch Loss = 0.7990390062332153, Accu
racy = 0.8292471170425415
Iter #4845568: Learning rate = 0.000705: Batch Loss = 0.706289, Accurac
y = 0.8515625
PERFORMANCE ON TEST SET:          Batch Loss = 0.830551028251648, Accur
acy = 0.7998608946800232
Iter #4849664: Learning rate = 0.000705: Batch Loss = 0.706056, Accurac
y = 0.861328125
PERFORMANCE ON TEST SET:          Batch Loss = 0.8344505429267883, Accu
racy = 0.8129020929336548
Iter #4853760: Learning rate = 0.000705: Batch Loss = 0.763922, Accurac
y = 0.830078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.801252007484436, Accur
acy = 0.8090766668319702
Iter #4857856: Learning rate = 0.000705: Batch Loss = 0.710226, Accurac
y = 0.84375
PERFORMANCE ON TEST SET:          Batch Loss = 0.7737032175064087, Accu
racy = 0.8264649510383606
Iter #4861952: Learning rate = 0.000705: Batch Loss = 0.708667, Accurac
y = 0.857421875
PERFORMANCE ON TEST SET:          Batch Loss = 0.7550537586212158, Accu
racy = 0.8358546495437622
Iter #4866048: Learning rate = 0.000705: Batch Loss = 0.736561, Accurac
y = 0.8359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.7740389108657837, Accu
racy = 0.821943998336792
Iter #4870144: Learning rate = 0.000705: Batch Loss = 0.725581, Accurac
y = 0.833984375
```

PERFORMANCE ON TEST SET: Batch Loss = 0.771003246307373, Accuracy = 0.8262910842895508  
Iter #4874240: Learning rate = 0.000705: Batch Loss = 0.782678, Accuracy = 0.806640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.7525495290756226, Accuracy = 0.8355068564414978  
Iter #4878336: Learning rate = 0.000705: Batch Loss = 0.715662, Accuracy = 0.84375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7490056753158569, Accuracy = 0.8332464098930359  
Iter #4882432: Learning rate = 0.000705: Batch Loss = 0.720049, Accuracy = 0.84765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.7781510353088379, Accuracy = 0.8222917914390564  
Iter #4886528: Learning rate = 0.000705: Batch Loss = 0.721644, Accuracy = 0.84765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.7502137422561646, Accuracy = 0.8328986167907715  
Iter #4890624: Learning rate = 0.000705: Batch Loss = 0.692865, Accuracy = 0.859375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7645775675773621, Accuracy = 0.8215962648391724  
Iter #4894720: Learning rate = 0.000705: Batch Loss = 0.745090, Accuracy = 0.83203125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7515039443969727, Accuracy = 0.8313336968421936  
Iter #4898816: Learning rate = 0.000705: Batch Loss = 0.668202, Accuracy = 0.87109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7653660178184509, Accuracy = 0.8365501761436462  
Iter #4902912: Learning rate = 0.000676: Batch Loss = 0.669122, Accuracy = 0.8828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.7448150515556335, Accuracy = 0.8323769569396973  
Iter #4907008: Learning rate = 0.000676: Batch Loss = 0.693658, Accuracy = 0.8671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.737175703048706, Accuracy = 0.8370718359947205  
Iter #4911104: Learning rate = 0.000676: Batch Loss = 0.725716, Accuracy = 0.83984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7374680042266846, Accuracy = 0.8335941433906555  
Iter #4915200: Learning rate = 0.000676: Batch Loss = 0.694320, Accuracy = 0.857421875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7711237668991089, Accuracy = 0.8328986167907715  
Iter #4919296: Learning rate = 0.000676: Batch Loss = 0.744187, Accuracy = 0.8359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.7676048278808594, Accuracy = 0.8235089778900146  
Iter #4923392: Learning rate = 0.000676: Batch Loss = 0.712394, Accuracy = 0.86328125  
PERFORMANCE ON TEST SET: Batch Loss = 0.762287437915802, Accuracy = 0.8276821374893188  
Iter #4927488: Learning rate = 0.000676: Batch Loss = 0.676879, Accuracy = 0.869140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.7436097860336304, Accuracy = 0.8362023830413818  
Iter #4931584: Learning rate = 0.000676: Batch Loss = 0.710867, Accuracy = 0.841796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7558688521385193, Accuracy = 0.841796875

```
racy = 0.8283776640892029
Iter #4935680: Learning rate = 0.000676: Batch Loss = 0.680738, Accuracy = 0.8671875
PERFORMANCE ON TEST SET: Batch Loss = 0.7431482076644897, Accuracy = 0.8315075635910034
Iter #4939776: Learning rate = 0.000676: Batch Loss = 0.667892, Accuracy = 0.873046875
PERFORMANCE ON TEST SET: Batch Loss = 0.7468893527984619, Accuracy = 0.830464243888855
Iter #4943872: Learning rate = 0.000676: Batch Loss = 0.698818, Accuracy = 0.859375
PERFORMANCE ON TEST SET: Batch Loss = 0.7345936298370361, Accuracy = 0.8318553566932678
Iter #4947968: Learning rate = 0.000676: Batch Loss = 0.675902, Accuracy = 0.865234375
PERFORMANCE ON TEST SET: Batch Loss = 0.741959810256958, Accuracy = 0.8320292234420776
Iter #4952064: Learning rate = 0.000676: Batch Loss = 0.690080, Accuracy = 0.857421875
PERFORMANCE ON TEST SET: Batch Loss = 0.7504581212997437, Accuracy = 0.8313336968421936
Iter #4956160: Learning rate = 0.000676: Batch Loss = 0.689968, Accuracy = 0.853515625
PERFORMANCE ON TEST SET: Batch Loss = 0.7565881013870239, Accuracy = 0.8316814303398132
Iter #4960256: Learning rate = 0.000676: Batch Loss = 0.626494, Accuracy = 0.87890625
PERFORMANCE ON TEST SET: Batch Loss = 0.7581765651702881, Accuracy = 0.8308120369911194
Iter #4964352: Learning rate = 0.000676: Batch Loss = 0.712502, Accuracy = 0.853515625
PERFORMANCE ON TEST SET: Batch Loss = 0.7571754455566406, Accuracy = 0.8292471170425415
Iter #4968448: Learning rate = 0.000676: Batch Loss = 0.692451, Accuracy = 0.865234375
PERFORMANCE ON TEST SET: Batch Loss = 0.7533148527145386, Accuracy = 0.8252477645874023
Iter #4972544: Learning rate = 0.000676: Batch Loss = 0.734628, Accuracy = 0.833984375
PERFORMANCE ON TEST SET: Batch Loss = 0.7137759923934937, Accuracy = 0.8384628891944885
Iter #4976640: Learning rate = 0.000676: Batch Loss = 0.646108, Accuracy = 0.873046875
PERFORMANCE ON TEST SET: Batch Loss = 0.6781765222549438, Accuracy = 0.8528951406478882
Iter #4980736: Learning rate = 0.000676: Batch Loss = 0.631399, Accuracy = 0.8828125
PERFORMANCE ON TEST SET: Batch Loss = 0.6570994853973389, Accuracy = 0.8568944334983826
Iter #4984832: Learning rate = 0.000676: Batch Loss = 0.610679, Accuracy = 0.875
PERFORMANCE ON TEST SET: Batch Loss = 0.64329993724823, Accuracy = 0.8662841320037842
Iter #4988928: Learning rate = 0.000676: Batch Loss = 0.625645, Accuracy = 0.87109375
PERFORMANCE ON TEST SET: Batch Loss = 0.653222918510437, Accuracy = 0.858633279800415
Iter #4993024: Learning rate = 0.000676: Batch Loss = 0.636728, Accuracy = 0.87109375
PERFORMANCE ON TEST SET: Batch Loss = 0.6723655462265015, Accuracy = 0.8534168004989624
```

Iter #4997120: Learning rate = 0.000676: Batch Loss = 0.603549, Accuracy = 0.890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6405497789382935, Accuracy = 0.8615893125534058  
Iter #5001216: Learning rate = 0.000649: Batch Loss = 0.606832, Accuracy = 0.88671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6376426815986633, Accuracy = 0.8641975522041321  
Iter #5005312: Learning rate = 0.000649: Batch Loss = 0.631965, Accuracy = 0.875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6404657363891602, Accuracy = 0.8648930788040161  
Iter #5009408: Learning rate = 0.000649: Batch Loss = 0.594215, Accuracy = 0.890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6216145157814026, Accuracy = 0.8704572916030884  
Iter #5013504: Learning rate = 0.000649: Batch Loss = 0.646349, Accuracy = 0.869140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6646579504013062, Accuracy = 0.8520257472991943  
Iter #5017600: Learning rate = 0.000649: Batch Loss = 0.648725, Accuracy = 0.86328125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6242190599441528, Accuracy = 0.8692401051521301  
Iter #5021696: Learning rate = 0.000649: Batch Loss = 0.606588, Accuracy = 0.89453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6232601404190063, Accuracy = 0.8681968450546265  
Iter #5025792: Learning rate = 0.000649: Batch Loss = 0.605022, Accuracy = 0.88671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6512912511825562, Accuracy = 0.8574160933494568  
Iter #5029888: Learning rate = 0.000649: Batch Loss = 0.606436, Accuracy = 0.884765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.625178337097168, Accuracy = 0.8695878982543945  
Iter #5033984: Learning rate = 0.000649: Batch Loss = 0.568243, Accuracy = 0.90234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6276105046272278, Accuracy = 0.8661102652549744  
Iter #5038080: Learning rate = 0.000649: Batch Loss = 0.606493, Accuracy = 0.865234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6388962864875793, Accuracy = 0.8641975522041321  
Iter #5042176: Learning rate = 0.000649: Batch Loss = 0.585359, Accuracy = 0.888671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6190500259399414, Accuracy = 0.8666318655014038  
Iter #5046272: Learning rate = 0.000649: Batch Loss = 0.629144, Accuracy = 0.87890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6115983724594116, Accuracy = 0.8794991970062256  
Iter #5050368: Learning rate = 0.000649: Batch Loss = 0.580067, Accuracy = 0.904296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6127694845199585, Accuracy = 0.8683707118034363  
Iter #5054464: Learning rate = 0.000649: Batch Loss = 0.596904, Accuracy = 0.8984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6294796466827393, Accuracy = 0.8654147386550903  
Iter #5058560: Learning rate = 0.000649: Batch Loss = 0.565656, Accuracy =

```
y = 0.900390625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6228330135345459, Accu
racy = 0.8721961379051208
Iter #5062656: Learning rate = 0.000649: Batch Loss = 0.591481, Accurac
y = 0.888671875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6298565864562988, Accu
racy = 0.8685445785522461
Iter #5066752: Learning rate = 0.000649: Batch Loss = 0.635907, Accurac
y = 0.85546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6247049570083618, Accu
racy = 0.8694140315055847
Iter #5070848: Learning rate = 0.000649: Batch Loss = 0.565872, Accurac
y = 0.900390625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6339026093482971, Accu
racy = 0.8754999041557312
Iter #5074944: Learning rate = 0.000649: Batch Loss = 0.579904, Accurac
y = 0.89453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6075023412704468, Accu
racy = 0.8728916645050049
Iter #5079040: Learning rate = 0.000649: Batch Loss = 0.571004, Accurac
y = 0.90625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6170530319213867, Accu
racy = 0.8735871911048889
Iter #5083136: Learning rate = 0.000649: Batch Loss = 0.532372, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.640191912651062, Accur
acy = 0.8721961379051208
Iter #5087232: Learning rate = 0.000649: Batch Loss = 0.957674, Accurac
y = 0.802734375
PERFORMANCE ON TEST SET:          Batch Loss = 0.6313338279724121, Accu
racy = 0.8702834248542786
Iter #5091328: Learning rate = 0.000649: Batch Loss = 0.615030, Accurac
y = 0.888671875
PERFORMANCE ON TEST SET:          Batch Loss = 0.6254103183746338, Accu
racy = 0.876369297504425
Iter #5095424: Learning rate = 0.000649: Batch Loss = 0.591550, Accurac
y = 0.892578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6070022583007812, Accu
racy = 0.8831507563591003
Iter #5099520: Learning rate = 0.000649: Batch Loss = 0.604830, Accurac
y = 0.869140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6069729328155518, Accu
racy = 0.8704572916030884
Iter #5103616: Learning rate = 0.000623: Batch Loss = 0.541776, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5992351770401001, Accu
racy = 0.8767170906066895
Iter #5107712: Learning rate = 0.000623: Batch Loss = 0.567367, Accurac
y = 0.908203125
PERFORMANCE ON TEST SET:          Batch Loss = 0.6004079580307007, Accu
racy = 0.8840201497077942
Iter #5111808: Learning rate = 0.000623: Batch Loss = 0.531595, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6079816222190857, Accu
racy = 0.8735871911048889
Iter #5115904: Learning rate = 0.000623: Batch Loss = 0.552543, Accurac
y = 0.91015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.6035485863685608, Accu
racy = 0.8831507563591003
Iter #5120000: Learning rate = 0.000623: Batch Loss = 0.523166, Accurac
y = 0.927734375
```

PERFORMANCE ON TEST SET: Batch Loss = 0.6062791347503662, Accuracy = 0.8831507563591003  
Iter #5124096: Learning rate = 0.000623: Batch Loss = 0.524104, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6064415574073792, Accuracy = 0.8836724162101746  
Iter #5128192: Learning rate = 0.000623: Batch Loss = 0.577382, Accuracy = 0.892578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5898763537406921, Accuracy = 0.8909754753112793  
Iter #5132288: Learning rate = 0.000623: Batch Loss = 0.534861, Accuracy = 0.9140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5904954075813293, Accuracy = 0.8920187950134277  
Iter #5136384: Learning rate = 0.000623: Batch Loss = 0.526029, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5826147794723511, Accuracy = 0.8935837149620056  
Iter #5140480: Learning rate = 0.000623: Batch Loss = 0.532618, Accuracy = 0.9140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5990040302276611, Accuracy = 0.8888888955116272  
Iter #5144576: Learning rate = 0.000623: Batch Loss = 0.502356, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5955449342727661, Accuracy = 0.887671709060669  
Iter #5148672: Learning rate = 0.000623: Batch Loss = 0.523379, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6032070517539978, Accuracy = 0.8843679428100586  
Iter #5152768: Learning rate = 0.000623: Batch Loss = 0.548705, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6002986431121826, Accuracy = 0.8869761824607849  
Iter #5156864: Learning rate = 0.000623: Batch Loss = 0.533962, Accuracy = 0.916015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5867745876312256, Accuracy = 0.8993218541145325  
Iter #5160960: Learning rate = 0.000623: Batch Loss = 0.540107, Accuracy = 0.916015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6005365252494812, Accuracy = 0.8880195021629333  
Iter #5165056: Learning rate = 0.000623: Batch Loss = 0.533482, Accuracy = 0.912109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.6084954142570496, Accuracy = 0.8901060819625854  
Iter #5169152: Learning rate = 0.000623: Batch Loss = 0.587624, Accuracy = 0.88671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6107721924781799, Accuracy = 0.8746305108070374  
Iter #5173248: Learning rate = 0.000623: Batch Loss = 0.523333, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.6050859689712524, Accuracy = 0.8911493420600891  
Iter #5177344: Learning rate = 0.000623: Batch Loss = 0.546900, Accuracy = 0.8984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5897167921066284, Accuracy = 0.8941053748130798  
Iter #5181440: Learning rate = 0.000623: Batch Loss = 0.532197, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5866837501525879, Accuracy =

```
racy = 0.889062762260437
Iter #5185536: Learning rate = 0.000623: Batch Loss = 0.528444, Accuracy = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.585970401763916, Accuracy = 0.8935837149620056
Iter #5189632: Learning rate = 0.000623: Batch Loss = 0.536308, Accuracy = 0.9140625
PERFORMANCE ON TEST SET: Batch Loss = 0.6001285314559937, Accuracy = 0.8812380433082581
Iter #5193728: Learning rate = 0.000623: Batch Loss = 0.527858, Accuracy = 0.921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5996261835098267, Accuracy = 0.8888888955116272
Iter #5197824: Learning rate = 0.000623: Batch Loss = 0.545759, Accuracy = 0.919921875
PERFORMANCE ON TEST SET: Batch Loss = 0.589043140411377, Accuracy = 0.8988001942634583
Iter #5201920: Learning rate = 0.000599: Batch Loss = 0.520734, Accuracy = 0.921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5986529588699341, Accuracy = 0.8873239159584045
Iter #5206016: Learning rate = 0.000599: Batch Loss = 0.543501, Accuracy = 0.923828125
PERFORMANCE ON TEST SET: Batch Loss = 0.5733647346496582, Accuracy = 0.8984524607658386
Iter #5210112: Learning rate = 0.000599: Batch Loss = 0.529142, Accuracy = 0.923828125
PERFORMANCE ON TEST SET: Batch Loss = 0.5901486277580261, Accuracy = 0.8937575817108154
Iter #5214208: Learning rate = 0.000599: Batch Loss = 0.535115, Accuracy = 0.923828125
PERFORMANCE ON TEST SET: Batch Loss = 0.5839142203330994, Accuracy = 0.8881933689117432
Iter #5218304: Learning rate = 0.000599: Batch Loss = 0.503812, Accuracy = 0.931640625
PERFORMANCE ON TEST SET: Batch Loss = 0.5854122042655945, Accuracy = 0.8937575817108154
Iter #5222400: Learning rate = 0.000599: Batch Loss = 0.565146, Accuracy = 0.90625
PERFORMANCE ON TEST SET: Batch Loss = 0.6144776344299316, Accuracy = 0.8826290965080261
Iter #5226496: Learning rate = 0.000599: Batch Loss = 0.554402, Accuracy = 0.90234375
PERFORMANCE ON TEST SET: Batch Loss = 0.581565260887146, Accuracy = 0.89393150806427
Iter #5230592: Learning rate = 0.000599: Batch Loss = 0.517772, Accuracy = 0.927734375
PERFORMANCE ON TEST SET: Batch Loss = 0.5733064413070679, Accuracy = 0.8941053748130798
Iter #5234688: Learning rate = 0.000599: Batch Loss = 0.498783, Accuracy = 0.939453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5843336582183838, Accuracy = 0.8906277418136597
Iter #5238784: Learning rate = 0.000599: Batch Loss = 0.522625, Accuracy = 0.921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5922949314117432, Accuracy = 0.8892366290092468
Iter #5242880: Learning rate = 0.000599: Batch Loss = 0.523482, Accuracy = 0.916015625
PERFORMANCE ON TEST SET: Batch Loss = 0.5866338014602661, Accuracy = 0.8934098482131958
```



Iter #5246976: Learning rate = 0.000599: Batch Loss = 0.509255, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5753926634788513, Accuracy = 0.8967136144638062  
Iter #5251072: Learning rate = 0.000599: Batch Loss = 0.532354, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5872905254364014, Accuracy = 0.8944531679153442  
Iter #5255168: Learning rate = 0.000599: Batch Loss = 0.558845, Accuracy = 0.90234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5921473503112793, Accuracy = 0.8864545226097107  
Iter #5259264: Learning rate = 0.000599: Batch Loss = 0.542633, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5927588939666748, Accuracy = 0.8909754753112793  
Iter #5263360: Learning rate = 0.000599: Batch Loss = 0.508238, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5697870850563049, Accuracy = 0.9048861265182495  
Iter #5267456: Learning rate = 0.000599: Batch Loss = 0.508502, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5748957395553589, Accuracy = 0.8963658213615417  
Iter #5271552: Learning rate = 0.000599: Batch Loss = 0.485664, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5802172422409058, Accuracy = 0.8960180878639221  
Iter #5275648: Learning rate = 0.000599: Batch Loss = 0.480977, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5714541673660278, Accuracy = 0.9040166735649109  
Iter #5279744: Learning rate = 0.000599: Batch Loss = 0.490416, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5813620090484619, Accuracy = 0.8948009014129639  
Iter #5283840: Learning rate = 0.000599: Batch Loss = 0.532576, Accuracy = 0.904296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5735437870025635, Accuracy = 0.9005390405654907  
Iter #5287936: Learning rate = 0.000599: Batch Loss = 0.502949, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5909090042114258, Accuracy = 0.8944531679153442  
Iter #5292032: Learning rate = 0.000599: Batch Loss = 0.519289, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5690436363220215, Accuracy = 0.8961919546127319  
Iter #5296128: Learning rate = 0.000599: Batch Loss = 0.519958, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5835995674133301, Accuracy = 0.8934098482131958  
Iter #5300224: Learning rate = 0.000575: Batch Loss = 0.575753, Accuracy = 0.89453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.614142894744873, Accuracy = 0.8694140315055847  
Iter #5304320: Learning rate = 0.000575: Batch Loss = 0.523899, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5811773538589478, Accuracy = 0.8895844221115112  
Iter #5308416: Learning rate = 0.000575: Batch Loss = 0.497269, Accuracy =

```
y = 0.9375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5779078006744385, Accu
racy = 0.893235981464386
Iter #5312512: Learning rate = 0.000575:  Batch Loss = 0.513170, Accurac
y = 0.916015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5929833650588989, Accu
racy = 0.8868023157119751
Iter #5316608: Learning rate = 0.000575:  Batch Loss = 0.531061, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5775030851364136, Accu
racy = 0.89393150806427
Iter #5320704: Learning rate = 0.000575:  Batch Loss = 0.534269, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5989322662353516, Accu
racy = 0.8847156763076782
Iter #5324800: Learning rate = 0.000575:  Batch Loss = 0.480212, Accurac
y = 0.947265625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5753719806671143, Accu
racy = 0.8996696472167969
Iter #5328896: Learning rate = 0.000575:  Batch Loss = 0.538044, Accurac
y = 0.916015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5957660675048828, Accu
racy = 0.8923665285110474
Iter #5332992: Learning rate = 0.000575:  Batch Loss = 0.521069, Accurac
y = 0.91015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5719211101531982, Accu
racy = 0.8979308009147644
Iter #5337088: Learning rate = 0.000575:  Batch Loss = 0.464261, Accurac
y = 0.953125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5823440551757812, Accu
racy = 0.894627034664154
Iter #5341184: Learning rate = 0.000575:  Batch Loss = 0.541890, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5619089603424072, Accu
racy = 0.9095809459686279
Iter #5345280: Learning rate = 0.000575:  Batch Loss = 0.475425, Accurac
y = 0.939453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.56986004114151, Accura
cy = 0.8988001942634583
Iter #5349376: Learning rate = 0.000575:  Batch Loss = 0.498448, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5769040584564209, Accu
racy = 0.8953225612640381
Iter #5353472: Learning rate = 0.000575:  Batch Loss = 0.488459, Accurac
y = 0.9453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5720326900482178, Accu
racy = 0.9036689400672913
Iter #5357568: Learning rate = 0.000575:  Batch Loss = 0.516707, Accurac
y = 0.923828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.578923761844635, Accur
acy = 0.8928881883621216
Iter #5361664: Learning rate = 0.000575:  Batch Loss = 0.507414, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5837321281433105, Accu
racy = 0.8899322152137756
Iter #5365760: Learning rate = 0.000575:  Batch Loss = 0.532390, Accurac
y = 0.90625
PERFORMANCE ON TEST SET:          Batch Loss = 0.597311794757843, Accur
acy = 0.8921926617622375
Iter #5369856: Learning rate = 0.000575:  Batch Loss = 0.532210, Accurac
y = 0.91796875
```

PERFORMANCE ON TEST SET: Batch Loss = 0.5668327212333679, Accuracy = 0.903147280216217  
Iter #5373952: Learning rate = 0.000575: Batch Loss = 0.504234, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5757237672805786, Accuracy = 0.8970614075660706  
Iter #5378048: Learning rate = 0.000575: Batch Loss = 0.525085, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5793222784996033, Accuracy = 0.8974091410636902  
Iter #5382144: Learning rate = 0.000575: Batch Loss = 0.478811, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.564099907875061, Accuracy = 0.901756227016449  
Iter #5386240: Learning rate = 0.000575: Batch Loss = 0.501696, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5595512390136719, Accuracy = 0.9029734134674072  
Iter #5390336: Learning rate = 0.000575: Batch Loss = 0.493645, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5733397006988525, Accuracy = 0.9001912474632263  
Iter #5394432: Learning rate = 0.000575: Batch Loss = 0.482017, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5723374485969543, Accuracy = 0.8986263275146484  
Iter #5398528: Learning rate = 0.000575: Batch Loss = 0.516552, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5872616767883301, Accuracy = 0.8984524607658386  
Iter #5402624: Learning rate = 0.000552: Batch Loss = 0.520270, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5693100690841675, Accuracy = 0.9008867740631104  
Iter #5406720: Learning rate = 0.000552: Batch Loss = 0.522332, Accuracy = 0.912109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.579056978225708, Accuracy = 0.8986263275146484  
Iter #5410816: Learning rate = 0.000552: Batch Loss = 0.500091, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5682991743087769, Accuracy = 0.898278534412384  
Iter #5414912: Learning rate = 0.000552: Batch Loss = 0.500472, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.559341311454773, Accuracy = 0.8989741206169128  
Iter #5419008: Learning rate = 0.000552: Batch Loss = 0.522810, Accuracy = 0.916015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5652114152908325, Accuracy = 0.9033211469650269  
Iter #5423104: Learning rate = 0.000552: Batch Loss = 0.505848, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5734562873840332, Accuracy = 0.8994957208633423  
Iter #5427200: Learning rate = 0.000552: Batch Loss = 0.519200, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5626345872879028, Accuracy = 0.9040166735649109  
Iter #5431296: Learning rate = 0.000552: Batch Loss = 0.527702, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.562602162361145, Accuracy = 0.919921875

```
acy = 0.903147280216217
Iter #5435392: Learning rate = 0.000552: Batch Loss = 0.524364, Accuracy = 0.921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5694724321365356, Accuracy = 0.9012345671653748
Iter #5439488: Learning rate = 0.000552: Batch Loss = 0.505806, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5689002871513367, Accuracy = 0.9000173807144165
Iter #5443584: Learning rate = 0.000552: Batch Loss = 0.539519, Accuracy = 0.916015625
PERFORMANCE ON TEST SET: Batch Loss = 0.5804420709609985, Accuracy = 0.896887481212616
Iter #5447680: Learning rate = 0.000552: Batch Loss = 0.526743, Accuracy = 0.927734375
PERFORMANCE ON TEST SET: Batch Loss = 0.5975028276443481, Accuracy = 0.892540454864502
Iter #5451776: Learning rate = 0.000552: Batch Loss = 0.546216, Accuracy = 0.904296875
PERFORMANCE ON TEST SET: Batch Loss = 0.5776431560516357, Accuracy = 0.8843679428100586
Iter #5455872: Learning rate = 0.000552: Batch Loss = 0.528407, Accuracy = 0.9140625
PERFORMANCE ON TEST SET: Batch Loss = 0.5799771547317505, Accuracy = 0.8951486945152283
Iter #5459968: Learning rate = 0.000552: Batch Loss = 0.512810, Accuracy = 0.927734375
PERFORMANCE ON TEST SET: Batch Loss = 0.5861669778823853, Accuracy = 0.8911493420600891
Iter #5464064: Learning rate = 0.000552: Batch Loss = 0.500400, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.571872889995575, Accuracy = 0.8974091410636902
Iter #5468160: Learning rate = 0.000552: Batch Loss = 0.520896, Accuracy = 0.921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5561032891273499, Accuracy = 0.9052338600158691
Iter #5472256: Learning rate = 0.000552: Batch Loss = 0.502796, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5651088953018188, Accuracy = 0.8979308009147644
Iter #5476352: Learning rate = 0.000552: Batch Loss = 0.524036, Accuracy = 0.931640625
PERFORMANCE ON TEST SET: Batch Loss = 0.5640323758125305, Accuracy = 0.9010607004165649
Iter #5480448: Learning rate = 0.000552: Batch Loss = 0.509071, Accuracy = 0.923828125
PERFORMANCE ON TEST SET: Batch Loss = 0.5733929872512817, Accuracy = 0.8967136144638062
Iter #5484544: Learning rate = 0.000552: Batch Loss = 0.505769, Accuracy = 0.9375
PERFORMANCE ON TEST SET: Batch Loss = 0.5547277331352234, Accuracy = 0.9048861265182495
Iter #5488640: Learning rate = 0.000552: Batch Loss = 0.499469, Accuracy = 0.927734375
PERFORMANCE ON TEST SET: Batch Loss = 0.561468243598938, Accuracy = 0.9027994871139526
Iter #5492736: Learning rate = 0.000552: Batch Loss = 0.500994, Accuracy = 0.9375
PERFORMANCE ON TEST SET: Batch Loss = 0.561892032623291, Accuracy = 0.9047122001647949
```

Iter #5496832: Learning rate = 0.000552: Batch Loss = 0.529293, Accuracy = 0.912109375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5663996934890747, Accuracy = 0.903147280216217  
Iter #5500928: Learning rate = 0.000530: Batch Loss = 0.500072, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5806994438171387, Accuracy = 0.887671709060669  
Iter #5505024: Learning rate = 0.000530: Batch Loss = 0.502024, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5700863599777222, Accuracy = 0.8981046676635742  
Iter #5509120: Learning rate = 0.000530: Batch Loss = 0.519961, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5899332761764526, Accuracy = 0.8951486945152283  
Iter #5513216: Learning rate = 0.000530: Batch Loss = 0.479516, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5682530999183655, Accuracy = 0.8979308009147644  
Iter #5517312: Learning rate = 0.000530: Batch Loss = 0.506707, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.56577068567276, Accuracy = 0.9036689400672913  
Iter #5521408: Learning rate = 0.000530: Batch Loss = 0.489104, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5605582594871521, Accuracy = 0.9059293866157532  
Iter #5525504: Learning rate = 0.000530: Batch Loss = 0.515064, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5687470436096191, Accuracy = 0.9003651738166809  
Iter #5529600: Learning rate = 0.000530: Batch Loss = 0.482671, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5530476570129395, Accuracy = 0.9014084339141846  
Iter #5533696: Learning rate = 0.000530: Batch Loss = 0.466919, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5529534220695496, Accuracy = 0.9036689400672913  
Iter #5537792: Learning rate = 0.000530: Batch Loss = 0.528848, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5575907230377197, Accuracy = 0.9048861265182495  
Iter #5541888: Learning rate = 0.000530: Batch Loss = 0.502170, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5718210935592651, Accuracy = 0.8904538154602051  
Iter #5545984: Learning rate = 0.000530: Batch Loss = 0.486851, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5489524602890015, Accuracy = 0.9071465730667114  
Iter #5550080: Learning rate = 0.000530: Batch Loss = 0.482271, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5525904893875122, Accuracy = 0.90801602602005  
Iter #5554176: Learning rate = 0.000530: Batch Loss = 0.496509, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5463560819625854, Accuracy = 0.9057555198669434  
Iter #5558272: Learning rate = 0.000530: Batch Loss = 0.528071, Accuracy =

```
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5597552061080933, Accu
racy = 0.9034950733184814
Iter #5562368: Learning rate = 0.000530: Batch Loss = 0.490230, Accurac
y = 0.939453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5608291625976562, Accu
racy = 0.9005390405654907
Iter #5566464: Learning rate = 0.000530: Batch Loss = 0.465628, Accurac
y = 0.94140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5424004793167114, Accu
racy = 0.9066249132156372
Iter #5570560: Learning rate = 0.000530: Batch Loss = 0.456937, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5423455238342285, Accu
racy = 0.9092331528663635
Iter #5574656: Learning rate = 0.000530: Batch Loss = 0.463606, Accurac
y = 0.939453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5656065940856934, Accu
racy = 0.8944531679153442
Iter #5578752: Learning rate = 0.000530: Batch Loss = 0.458935, Accurac
y = 0.947265625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5401479005813599, Accu
racy = 0.9127108454704285
Iter #5582848: Learning rate = 0.000530: Batch Loss = 0.457416, Accurac
y = 0.953125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5281507968902588, Accu
racy = 0.9189705848693848
Iter #5586944: Learning rate = 0.000530: Batch Loss = 0.505098, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5333746671676636, Accu
racy = 0.915840744972229
Iter #5591040: Learning rate = 0.000530: Batch Loss = 0.441274, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5453368425369263, Accu
racy = 0.9127108454704285
Iter #5595136: Learning rate = 0.000530: Batch Loss = 0.474573, Accurac
y = 0.9375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5368279814720154, Accu
racy = 0.9184489846229553
Iter #5599232: Learning rate = 0.000530: Batch Loss = 0.442949, Accurac
y = 0.95703125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5251089334487915, Accu
racy = 0.9184489846229553
Iter #5603328: Learning rate = 0.000508: Batch Loss = 0.450859, Accurac
y = 0.94921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5375866889953613, Accu
racy = 0.916536271572113
Iter #5607424: Learning rate = 0.000508: Batch Loss = 0.496295, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5176138877868652, Accu
racy = 0.9234915375709534
Iter #5611520: Learning rate = 0.000508: Batch Loss = 0.418842, Accurac
y = 0.98046875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5339100360870361, Accu
racy = 0.9170579314231873
Iter #5615616: Learning rate = 0.000508: Batch Loss = 0.455964, Accurac
y = 0.943359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5594161748886108, Accu
racy = 0.9069727063179016
Iter #5619712: Learning rate = 0.000508: Batch Loss = 0.471938, Accurac
y = 0.9375
```

PERFORMANCE ON TEST SET: Batch Loss = 0.534960150718689, Accuracy = 0.9146235585212708  
Iter #5623808: Learning rate = 0.000508: Batch Loss = 0.488714, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5191594362258911, Accuracy = 0.9196661710739136  
Iter #5627904: Learning rate = 0.000508: Batch Loss = 0.446268, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5166451334953308, Accuracy = 0.9214049577713013  
Iter #5632000: Learning rate = 0.000508: Batch Loss = 0.448284, Accuracy = 0.95703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.521916389465332, Accuracy = 0.9212310910224915  
Iter #5636096: Learning rate = 0.000508: Batch Loss = 0.464530, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5145135521888733, Accuracy = 0.9224482774734497  
Iter #5640192: Learning rate = 0.000508: Batch Loss = 0.482835, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5235961675643921, Accuracy = 0.920187771320343  
Iter #5644288: Learning rate = 0.000508: Batch Loss = 0.441882, Accuracy = 0.955078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5164387226104736, Accuracy = 0.9229699373245239  
Iter #5648384: Learning rate = 0.000508: Batch Loss = 0.468255, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5345703959465027, Accuracy = 0.9174056649208069  
Iter #5652480: Learning rate = 0.000508: Batch Loss = 0.461471, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5155845880508423, Accuracy = 0.9269692301750183  
Iter #5656576: Learning rate = 0.000508: Batch Loss = 0.494003, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 2.7253575325012207, Accuracy = 0.6125891208648682  
Iter #5660672: Learning rate = 0.000508: Batch Loss = 1.235504, Accuracy = 0.70703125  
PERFORMANCE ON TEST SET: Batch Loss = 1.2598435878753662, Accuracy = 0.7170926928520203  
Iter #5664768: Learning rate = 0.000508: Batch Loss = 0.733216, Accuracy = 0.84765625  
PERFORMANCE ON TEST SET: Batch Loss = 0.7691504955291748, Accuracy = 0.8341158032417297  
Iter #5668864: Learning rate = 0.000508: Batch Loss = 0.654173, Accuracy = 0.8671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.7428396344184875, Accuracy = 0.8509824275970459  
Iter #5672960: Learning rate = 0.000508: Batch Loss = 0.667621, Accuracy = 0.8671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6871545314788818, Accuracy = 0.8610676527023315  
Iter #5677056: Learning rate = 0.000508: Batch Loss = 0.597426, Accuracy = 0.888671875  
PERFORMANCE ON TEST SET: Batch Loss = 0.649387001991272, Accuracy = 0.8725439310073853  
Iter #5681152: Learning rate = 0.000508: Batch Loss = 0.582972, Accuracy = 0.896484375  
PERFORMANCE ON TEST SET: Batch Loss = 0.638447642326355, Accuracy =

```
acy = 0.8748043775558472
Iter #5685248: Learning rate = 0.000508: Batch Loss = 0.598066, Accuracy = 0.90234375
PERFORMANCE ON TEST SET: Batch Loss = 0.6344250440597534, Accuracy = 0.8751521706581116
Iter #5689344: Learning rate = 0.000508: Batch Loss = 0.614544, Accuracy = 0.896484375
PERFORMANCE ON TEST SET: Batch Loss = 0.6306390762329102, Accuracy = 0.8668057918548584
Iter #5693440: Learning rate = 0.000508: Batch Loss = 0.530307, Accuracy = 0.919921875
PERFORMANCE ON TEST SET: Batch Loss = 0.6085430383682251, Accuracy = 0.887671709060669
Iter #5697536: Learning rate = 0.000508: Batch Loss = 0.554238, Accuracy = 0.90625
PERFORMANCE ON TEST SET: Batch Loss = 0.6126371026039124, Accuracy = 0.8751521706581116
Iter #5701632: Learning rate = 0.000488: Batch Loss = 0.558240, Accuracy = 0.90625
PERFORMANCE ON TEST SET: Batch Loss = 0.6019556522369385, Accuracy = 0.8828029632568359
Iter #5705728: Learning rate = 0.000488: Batch Loss = 0.604492, Accuracy = 0.890625
PERFORMANCE ON TEST SET: Batch Loss = 0.6078161001205444, Accuracy = 0.8796731233596802
Iter #5709824: Learning rate = 0.000488: Batch Loss = 0.534747, Accuracy = 0.912109375
PERFORMANCE ON TEST SET: Batch Loss = 0.6055391430854797, Accuracy = 0.8808902502059937
Iter #5713920: Learning rate = 0.000488: Batch Loss = 0.589022, Accuracy = 0.896484375
PERFORMANCE ON TEST SET: Batch Loss = 0.5984035730361938, Accuracy = 0.8817597031593323
Iter #5718016: Learning rate = 0.000488: Batch Loss = 0.528054, Accuracy = 0.916015625
PERFORMANCE ON TEST SET: Batch Loss = 0.5984244346618652, Accuracy = 0.8840201497077942
Iter #5722112: Learning rate = 0.000488: Batch Loss = 0.541734, Accuracy = 0.9140625
PERFORMANCE ON TEST SET: Batch Loss = 0.5936249494552612, Accuracy = 0.889758288860321
Iter #5726208: Learning rate = 0.000488: Batch Loss = 0.510269, Accuracy = 0.923828125
PERFORMANCE ON TEST SET: Batch Loss = 0.5901724100112915, Accuracy = 0.8899322152137756
Iter #5730304: Learning rate = 0.000488: Batch Loss = 0.528597, Accuracy = 0.916015625
PERFORMANCE ON TEST SET: Batch Loss = 0.5920867323875427, Accuracy = 0.8829768896102905
Iter #5734400: Learning rate = 0.000488: Batch Loss = 0.564779, Accuracy = 0.90234375
PERFORMANCE ON TEST SET: Batch Loss = 0.5840635895729065, Accuracy = 0.8902799487113953
Iter #5738496: Learning rate = 0.000488: Batch Loss = 0.544701, Accuracy = 0.9140625
PERFORMANCE ON TEST SET: Batch Loss = 0.5831173658370972, Accuracy = 0.8904538154602051
Iter #5742592: Learning rate = 0.000488: Batch Loss = 0.568409, Accuracy = 0.89453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5776392221450806, Accuracy = 0.8935837149620056
```



Iter #5746688: Learning rate = 0.000488: Batch Loss = 0.525012, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5745381116867065, Accuracy = 0.8914971351623535  
Iter #5750784: Learning rate = 0.000488: Batch Loss = 0.544484, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5716984272003174, Accuracy = 0.8942792415618896  
Iter #5754880: Learning rate = 0.000488: Batch Loss = 0.577533, Accuracy = 0.896484375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5852501392364502, Accuracy = 0.8885411024093628  
Iter #5758976: Learning rate = 0.000488: Batch Loss = 0.524598, Accuracy = 0.908203125  
PERFORMANCE ON TEST SET: Batch Loss = 0.6106406450271606, Accuracy = 0.8796731233596802  
Iter #5763072: Learning rate = 0.000488: Batch Loss = 0.499388, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5821048021316528, Accuracy = 0.8928881883621216  
Iter #5767168: Learning rate = 0.000488: Batch Loss = 0.551851, Accuracy = 0.90234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.582452118396759, Accuracy = 0.8895844221115112  
Iter #5771264: Learning rate = 0.000488: Batch Loss = 0.531351, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5737994909286499, Accuracy = 0.8948009014129639  
Iter #5775360: Learning rate = 0.000488: Batch Loss = 0.529492, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5647854804992676, Accuracy = 0.9012345671653748  
Iter #5779456: Learning rate = 0.000488: Batch Loss = 0.523399, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5648508071899414, Accuracy = 0.8965397477149963  
Iter #5783552: Learning rate = 0.000488: Batch Loss = 0.506585, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5627535581588745, Accuracy = 0.898278534412384  
Iter #5787648: Learning rate = 0.000488: Batch Loss = 0.490189, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5589456558227539, Accuracy = 0.901756227016449  
Iter #5791744: Learning rate = 0.000488: Batch Loss = 0.556796, Accuracy = 0.8984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5630843639373779, Accuracy = 0.8975830078125  
Iter #5795840: Learning rate = 0.000488: Batch Loss = 0.506802, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5581214427947998, Accuracy = 0.9007129073143005  
Iter #5799936: Learning rate = 0.000488: Batch Loss = 0.473689, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5606911778450012, Accuracy = 0.903147280216217  
Iter #5804032: Learning rate = 0.000468: Batch Loss = 0.554981, Accuracy = 0.904296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5574866533279419, Accuracy = 0.9014084339141846  
Iter #5808128: Learning rate = 0.000468: Batch Loss = 0.499357, Accuracy =

```
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5558179616928101, Accu
racy = 0.9026256203651428
Iter #5812224: Learning rate = 0.000468: Batch Loss = 0.542700, Accurac
y = 0.91015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5498577952384949, Accu
racy = 0.9048861265182495
Iter #5816320: Learning rate = 0.000468: Batch Loss = 0.485768, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5585446357727051, Accu
racy = 0.9010607004165649
Iter #5820416: Learning rate = 0.000468: Batch Loss = 0.456613, Accurac
y = 0.939453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5761573314666748, Accu
racy = 0.8909754753112793
Iter #5824512: Learning rate = 0.000468: Batch Loss = 0.551098, Accurac
y = 0.89453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5643998384475708, Accu
racy = 0.8977569341659546
Iter #5828608: Learning rate = 0.000468: Batch Loss = 0.535882, Accurac
y = 0.90234375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5568498373031616, Accu
racy = 0.8994957208633423
Iter #5832704: Learning rate = 0.000468: Batch Loss = 0.510924, Accurac
y = 0.919921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5488922595977783, Accu
racy = 0.8996696472167969
Iter #5836800: Learning rate = 0.000468: Batch Loss = 0.502576, Accurac
y = 0.927734375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5624866485595703, Accu
racy = 0.9021039605140686
Iter #5840896: Learning rate = 0.000468: Batch Loss = 0.583258, Accurac
y = 0.892578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.560107946395874, Accur
acy = 0.8974091410636902
Iter #5844992: Learning rate = 0.000468: Batch Loss = 0.516567, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5554372072219849, Accu
racy = 0.9015823602676392
Iter #5849088: Learning rate = 0.000468: Batch Loss = 0.536434, Accurac
y = 0.9140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5669137835502625, Accu
racy = 0.9045383334159851
Iter #5853184: Learning rate = 0.000468: Batch Loss = 0.512675, Accurac
y = 0.921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5642839670181274, Accu
racy = 0.8961919546127319
Iter #5857280: Learning rate = 0.000468: Batch Loss = 0.532016, Accurac
y = 0.916015625
PERFORMANCE ON TEST SET:          Batch Loss = 0.551220715045929, Accur
acy = 0.9040166735649109
Iter #5861376: Learning rate = 0.000468: Batch Loss = 0.489537, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.544786810874939, Accur
acy = 0.9033211469650269
Iter #5865472: Learning rate = 0.000468: Batch Loss = 0.514447, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5434743165969849, Accu
racy = 0.9033211469650269
Iter #5869568: Learning rate = 0.000468: Batch Loss = 0.505634, Accurac
y = 0.927734375
```

PERFORMANCE ON TEST SET: Batch Loss = 0.5480972528457642, Accuracy = 0.8993218541145325  
Iter #5873664: Learning rate = 0.000468: Batch Loss = 0.455765, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5516607165336609, Accuracy = 0.8998435139656067  
Iter #5877760: Learning rate = 0.000468: Batch Loss = 0.545617, Accuracy = 0.90234375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5519078969955444, Accuracy = 0.9027994871139526  
Iter #5881856: Learning rate = 0.000468: Batch Loss = 0.571881, Accuracy = 0.904296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.6018202900886536, Accuracy = 0.8788036704063416  
Iter #5885952: Learning rate = 0.000468: Batch Loss = 0.517490, Accuracy = 0.916015625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5611716508865356, Accuracy = 0.8944531679153442  
Iter #5890048: Learning rate = 0.000468: Batch Loss = 0.496725, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5635651350021362, Accuracy = 0.8991479873657227  
Iter #5894144: Learning rate = 0.000468: Batch Loss = 0.530158, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5652843713760376, Accuracy = 0.8981046676635742  
Iter #5898240: Learning rate = 0.000468: Batch Loss = 0.511501, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5579431056976318, Accuracy = 0.9005390405654907  
Iter #5902336: Learning rate = 0.000450: Batch Loss = 0.496229, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5508986711502075, Accuracy = 0.9094070792198181  
Iter #5906432: Learning rate = 0.000450: Batch Loss = 0.519414, Accuracy = 0.92578125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5598577857017517, Accuracy = 0.9001912474632263  
Iter #5910528: Learning rate = 0.000450: Batch Loss = 0.523986, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5547407865524292, Accuracy = 0.9022778868675232  
Iter #5914624: Learning rate = 0.000450: Batch Loss = 0.461821, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5629556179046631, Accuracy = 0.8977569341659546  
Iter #5918720: Learning rate = 0.000450: Batch Loss = 0.509557, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5479402542114258, Accuracy = 0.9050599932670593  
Iter #5922816: Learning rate = 0.000450: Batch Loss = 0.494503, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5491771697998047, Accuracy = 0.9019300937652588  
Iter #5926912: Learning rate = 0.000450: Batch Loss = 0.502618, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5422751307487488, Accuracy = 0.9061033129692078  
Iter #5931008: Learning rate = 0.000450: Batch Loss = 0.492690, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5379216074943542, Accuracy = 0.9296875

```
racy = 0.9040166735649109
Iter #5935104: Learning rate = 0.000450: Batch Loss = 0.458353, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.5405788421630859, Accuracy = 0.9033211469650269
Iter #5939200: Learning rate = 0.000450: Batch Loss = 0.499651, Accuracy = 0.923828125
PERFORMANCE ON TEST SET: Batch Loss = 0.5325419902801514, Accuracy = 0.9090592861175537
Iter #5943296: Learning rate = 0.000450: Batch Loss = 0.484324, Accuracy = 0.9453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5496894717216492, Accuracy = 0.9029734134674072
Iter #5947392: Learning rate = 0.000450: Batch Loss = 0.485961, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5368386507034302, Accuracy = 0.9074943661689758
Iter #5951488: Learning rate = 0.000450: Batch Loss = 0.492458, Accuracy = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5363049507141113, Accuracy = 0.9078420996665955
Iter #5955584: Learning rate = 0.000450: Batch Loss = 0.464733, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.5331180095672607, Accuracy = 0.9057555198669434
Iter #5959680: Learning rate = 0.000450: Batch Loss = 0.469515, Accuracy = 0.953125
PERFORMANCE ON TEST SET: Batch Loss = 0.5202245712280273, Accuracy = 0.9182750582695007
Iter #5963776: Learning rate = 0.000450: Batch Loss = 0.493377, Accuracy = 0.91796875
PERFORMANCE ON TEST SET: Batch Loss = 0.534593939781189, Accuracy = 0.9083637595176697
Iter #5967872: Learning rate = 0.000450: Batch Loss = 0.492931, Accuracy = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.5390146374702454, Accuracy = 0.9048861265182495
Iter #5971968: Learning rate = 0.000450: Batch Loss = 0.509387, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5522154569625854, Accuracy = 0.9055816531181335
Iter #5976064: Learning rate = 0.000450: Batch Loss = 0.515528, Accuracy = 0.92578125
PERFORMANCE ON TEST SET: Batch Loss = 0.5422375798225403, Accuracy = 0.9081898927688599
Iter #5980160: Learning rate = 0.000450: Batch Loss = 0.476538, Accuracy = 0.9375
PERFORMANCE ON TEST SET: Batch Loss = 0.5507104992866516, Accuracy = 0.9061033129692078
Iter #5984256: Learning rate = 0.000450: Batch Loss = 0.473593, Accuracy = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5337371826171875, Accuracy = 0.9141018986701965
Iter #5988352: Learning rate = 0.000450: Batch Loss = 0.547121, Accuracy = 0.8984375
PERFORMANCE ON TEST SET: Batch Loss = 0.5502095222473145, Accuracy = 0.8993218541145325
Iter #5992448: Learning rate = 0.000450: Batch Loss = 0.447996, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.530012845993042, Accuracy = 0.9120153188705444
```

Iter #5996544: Learning rate = 0.000450: Batch Loss = 0.486094, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5428813099861145, Accuracy = 0.9041905999183655  
Iter #6000640: Learning rate = 0.000432: Batch Loss = 0.526553, Accuracy = 0.9140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5351192951202393, Accuracy = 0.9144496321678162  
Iter #6004736: Learning rate = 0.000432: Batch Loss = 0.502216, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5532134771347046, Accuracy = 0.9008867740631104  
Iter #6008832: Learning rate = 0.000432: Batch Loss = 0.482652, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5335649847984314, Accuracy = 0.91166752576828  
Iter #6012928: Learning rate = 0.000432: Batch Loss = 0.502523, Accuracy = 0.921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5359315276145935, Accuracy = 0.90801602602005  
Iter #6017024: Learning rate = 0.000432: Batch Loss = 0.499819, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5280667543411255, Accuracy = 0.9106242656707764  
Iter #6021120: Learning rate = 0.000432: Batch Loss = 0.508590, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5255612134933472, Accuracy = 0.9121891856193542  
Iter #6025216: Learning rate = 0.000432: Batch Loss = 0.490720, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.524354100227356, Accuracy = 0.9144496321678162  
Iter #6029312: Learning rate = 0.000432: Batch Loss = 0.498118, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5348780155181885, Accuracy = 0.9088854193687439  
Iter #6033408: Learning rate = 0.000432: Batch Loss = 0.471534, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5562498569488525, Accuracy = 0.9015823602676392  
Iter #6037504: Learning rate = 0.000432: Batch Loss = 0.478854, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5471363067626953, Accuracy = 0.9034950733184814  
Iter #6041600: Learning rate = 0.000432: Batch Loss = 0.520507, Accuracy = 0.91796875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5368685722351074, Accuracy = 0.9078420996665955  
Iter #6045696: Learning rate = 0.000432: Batch Loss = 0.454643, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5477537512779236, Accuracy = 0.9027994871139526  
Iter #6049792: Learning rate = 0.000432: Batch Loss = 0.501810, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5304393172264099, Accuracy = 0.9135802388191223  
Iter #6053888: Learning rate = 0.000432: Batch Loss = 0.482727, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5285792350769043, Accuracy = 0.9099286794662476  
Iter #6057984: Learning rate = 0.000432: Batch Loss = 0.483595, Accuracy =

```
y = 0.9296875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5215131044387817, Accu
racy = 0.9142757654190063
Iter #6062080: Learning rate = 0.000432: Batch Loss = 0.516545, Accurac
y = 0.92578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5309970378875732, Accu
racy = 0.910276472568512
Iter #6066176: Learning rate = 0.000432: Batch Loss = 0.496776, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.522383987903595, Accur
acy = 0.915840744972229
Iter #6070272: Learning rate = 0.000432: Batch Loss = 0.477282, Accurac
y = 0.9296875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5278542041778564, Accu
racy = 0.9111458659172058
Iter #6074368: Learning rate = 0.000432: Batch Loss = 0.460933, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5320858955383301, Accu
racy = 0.910276472568512
Iter #6078464: Learning rate = 0.000432: Batch Loss = 0.481171, Accurac
y = 0.92578125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5349958539009094, Accu
racy = 0.9081898927688599
Iter #6082560: Learning rate = 0.000432: Batch Loss = 0.452956, Accurac
y = 0.95703125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5284156203269958, Accu
racy = 0.9120153188705444
Iter #6086656: Learning rate = 0.000432: Batch Loss = 0.465371, Accurac
y = 0.94921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5249704718589783, Accu
racy = 0.9121891856193542
Iter #6090752: Learning rate = 0.000432: Batch Loss = 0.486637, Accurac
y = 0.923828125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5251203775405884, Accu
racy = 0.9170579314231873
Iter #6094848: Learning rate = 0.000432: Batch Loss = 0.484022, Accurac
y = 0.9375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5229935646057129, Accu
racy = 0.915840744972229
Iter #6098944: Learning rate = 0.000432: Batch Loss = 0.473130, Accurac
y = 0.953125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5268774032592773, Accu
racy = 0.9142757654190063
Iter #6103040: Learning rate = 0.000414: Batch Loss = 0.471625, Accurac
y = 0.939453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5220902562141418, Accu
racy = 0.9156668186187744
Iter #6107136: Learning rate = 0.000414: Batch Loss = 0.507646, Accurac
y = 0.921875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5218015909194946, Accu
racy = 0.9128847122192383
Iter #6111232: Learning rate = 0.000414: Batch Loss = 0.487504, Accurac
y = 0.931640625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5169198513031006, Accu
racy = 0.9141018986701965
Iter #6115328: Learning rate = 0.000414: Batch Loss = 0.501818, Accurac
y = 0.93359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5231406688690186, Accu
racy = 0.9130585789680481
Iter #6119424: Learning rate = 0.000414: Batch Loss = 0.462825, Accurac
y = 0.94921875
```

PERFORMANCE ON TEST SET: Batch Loss = 0.51998370885849, Accuracy = 0.9179273247718811  
Iter #6123520: Learning rate = 0.000414: Batch Loss = 0.454208, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5156670212745667, Accuracy = 0.9170579314231873  
Iter #6127616: Learning rate = 0.000414: Batch Loss = 0.474119, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5223578214645386, Accuracy = 0.9139280319213867  
Iter #6131712: Learning rate = 0.000414: Batch Loss = 0.458377, Accuracy = 0.955078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.516137421131134, Accuracy = 0.9198400378227234  
Iter #6135808: Learning rate = 0.000414: Batch Loss = 0.477677, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5441007614135742, Accuracy = 0.903147280216217  
Iter #6139904: Learning rate = 0.000414: Batch Loss = 0.476607, Accuracy = 0.935546875  
PERFORMANCE ON TEST SET: Batch Loss = 0.506463348865509, Accuracy = 0.9210572242736816  
Iter #6144000: Learning rate = 0.000414: Batch Loss = 0.512045, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5065855979919434, Accuracy = 0.9215788841247559  
Iter #6148096: Learning rate = 0.000414: Batch Loss = 0.511487, Accuracy = 0.919921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5143939256668091, Accuracy = 0.9175795316696167  
Iter #6152192: Learning rate = 0.000414: Batch Loss = 0.462443, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5145276188850403, Accuracy = 0.9179273247718811  
Iter #6156288: Learning rate = 0.000414: Batch Loss = 0.485912, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5147134065628052, Accuracy = 0.918796718120575  
Iter #6160384: Learning rate = 0.000414: Batch Loss = 0.467867, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5294597148895264, Accuracy = 0.9114936590194702  
Iter #6164480: Learning rate = 0.000414: Batch Loss = 0.509855, Accuracy = 0.927734375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5471370816230774, Accuracy = 0.9073204398155212  
Iter #6168576: Learning rate = 0.000414: Batch Loss = 0.478693, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5182875990867615, Accuracy = 0.9147974252700806  
Iter #6172672: Learning rate = 0.000414: Batch Loss = 0.508447, Accuracy = 0.9140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5208573341369629, Accuracy = 0.9125369787216187  
Iter #6176768: Learning rate = 0.000414: Batch Loss = 0.485063, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5356755256652832, Accuracy = 0.9118413925170898  
Iter #6180864: Learning rate = 0.000414: Batch Loss = 0.436034, Accuracy = 0.95703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5330668687820435, Accuracy = 0.95703125

```
racy = 0.9111458659172058
Iter #6184960: Learning rate = 0.000414: Batch Loss = 0.511590, Accuracy = 0.919921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5138932466506958, Accuracy = 0.9217527508735657
Iter #6189056: Learning rate = 0.000414: Batch Loss = 0.482040, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.527296781539917, Accuracy = 0.9088854193687439
Iter #6193152: Learning rate = 0.000414: Batch Loss = 0.472952, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.5345615744590759, Accuracy = 0.9142757654190063
Iter #6197248: Learning rate = 0.000414: Batch Loss = 0.479489, Accuracy = 0.9375
PERFORMANCE ON TEST SET: Batch Loss = 0.5273844599723816, Accuracy = 0.9104503393173218
Iter #6201344: Learning rate = 0.000398: Batch Loss = 0.482353, Accuracy = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.5224936008453369, Accuracy = 0.9132325053215027
Iter #6205440: Learning rate = 0.000398: Batch Loss = 0.492613, Accuracy = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.5299658179283142, Accuracy = 0.9099286794662476
Iter #6209536: Learning rate = 0.000398: Batch Loss = 0.475144, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5065867900848389, Accuracy = 0.9198400378227234
Iter #6213632: Learning rate = 0.000398: Batch Loss = 0.455280, Accuracy = 0.953125
PERFORMANCE ON TEST SET: Batch Loss = 0.5064140558242798, Accuracy = 0.9203616976737976
Iter #6217728: Learning rate = 0.000398: Batch Loss = 0.477373, Accuracy = 0.931640625
PERFORMANCE ON TEST SET: Batch Loss = 0.5096341371536255, Accuracy = 0.9198400378227234
Iter #6221824: Learning rate = 0.000398: Batch Loss = 0.444098, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.5073831081390381, Accuracy = 0.9226221442222595
Iter #6225920: Learning rate = 0.000398: Batch Loss = 0.468651, Accuracy = 0.951171875
PERFORMANCE ON TEST SET: Batch Loss = 0.49890583753585815, Accuracy = 0.9274908900260925
Iter #6230016: Learning rate = 0.000398: Batch Loss = 0.480405, Accuracy = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.517809271812439, Accuracy = 0.915840744972229
Iter #6234112: Learning rate = 0.000398: Batch Loss = 0.510440, Accuracy = 0.92578125
PERFORMANCE ON TEST SET: Batch Loss = 0.5194019675254822, Accuracy = 0.9200139045715332
Iter #6238208: Learning rate = 0.000398: Batch Loss = 0.484854, Accuracy = 0.93359375
PERFORMANCE ON TEST SET: Batch Loss = 0.5189868807792664, Accuracy = 0.9144496321678162
Iter #6242304: Learning rate = 0.000398: Batch Loss = 0.493787, Accuracy = 0.9296875
PERFORMANCE ON TEST SET: Batch Loss = 0.5121821761131287, Accuracy = 0.9198400378227234
```



Iter #6246400: Learning rate = 0.000398: Batch Loss = 0.420383, Accuracy = 0.955078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.49991297721862793, Accuracy = 0.9233176708221436  
Iter #6250496: Learning rate = 0.000398: Batch Loss = 0.469020, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5042952299118042, Accuracy = 0.9217527508735657  
Iter #6254592: Learning rate = 0.000398: Batch Loss = 0.435135, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5008261203765869, Accuracy = 0.9241871237754822  
Iter #6258688: Learning rate = 0.000398: Batch Loss = 0.438718, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5022792816162109, Accuracy = 0.9271430969238281  
Iter #6262784: Learning rate = 0.000398: Batch Loss = 0.497493, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5110781788825989, Accuracy = 0.9215788841247559  
Iter #6266880: Learning rate = 0.000398: Batch Loss = 0.470935, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5089581608772278, Accuracy = 0.9186228513717651  
Iter #6270976: Learning rate = 0.000398: Batch Loss = 0.462204, Accuracy = 0.94140625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5002334713935852, Accuracy = 0.9294036030769348  
Iter #6275072: Learning rate = 0.000398: Batch Loss = 0.456872, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5019201636314392, Accuracy = 0.9227960109710693  
Iter #6279168: Learning rate = 0.000398: Batch Loss = 0.470888, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5010544061660767, Accuracy = 0.9248826503753662  
Iter #6283264: Learning rate = 0.000398: Batch Loss = 0.490949, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5175583958625793, Accuracy = 0.9193183779716492  
Iter #6287360: Learning rate = 0.000398: Batch Loss = 0.500551, Accuracy = 0.923828125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5035141110420227, Accuracy = 0.9207094311714172  
Iter #6291456: Learning rate = 0.000398: Batch Loss = 0.504762, Accuracy = 0.931640625  
PERFORMANCE ON TEST SET: Batch Loss = 0.5029176473617554, Accuracy = 0.923665463924408  
Iter #6295552: Learning rate = 0.000398: Batch Loss = 0.451777, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5051506757736206, Accuracy = 0.9215788841247559  
Iter #6299648: Learning rate = 0.000398: Batch Loss = 0.458114, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.4982941150665283, Accuracy = 0.9245348572731018  
Iter #6303744: Learning rate = 0.000382: Batch Loss = 0.449738, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.49341559410095215, Accuracy = 0.9314901828765869  
Iter #6307840: Learning rate = 0.000382: Batch Loss = 0.438272, Accuracy =

```
y = 0.9609375
PERFORMANCE ON TEST SET:          Batch Loss = 0.4982990026473999, Accu
racy = 0.9234915375709534
Iter #6311936: Learning rate = 0.000382:  Batch Loss = 0.437481, Accurac
y = 0.962890625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5004578828811646, Accu
racy = 0.924360990524292
Iter #6316032: Learning rate = 0.000382:  Batch Loss = 0.461175, Accurac
y = 0.9375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5057970285415649, Accu
racy = 0.9266214370727539
Iter #6320128: Learning rate = 0.000382:  Batch Loss = 0.477684, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5106037855148315, Accu
racy = 0.9248826503753662
Iter #6324224: Learning rate = 0.000382:  Batch Loss = 0.493746, Accurac
y = 0.94140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5330840349197388, Accu
racy = 0.915145218372345
Iter #6328320: Learning rate = 0.000382:  Batch Loss = 0.473326, Accurac
y = 0.94140625
PERFORMANCE ON TEST SET:          Batch Loss = 0.5151533484458923, Accu
racy = 0.915840744972229
Iter #6332416: Learning rate = 0.000382:  Batch Loss = 0.427529, Accurac
y = 0.95703125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5024794936180115, Accu
racy = 0.9224482774734497
Iter #6336512: Learning rate = 0.000382:  Batch Loss = 0.470202, Accurac
y = 0.935546875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5059066414833069, Accu
racy = 0.9189705848693848
Iter #6340608: Learning rate = 0.000382:  Batch Loss = 0.467920, Accurac
y = 0.9375
PERFORMANCE ON TEST SET:          Batch Loss = 0.5104122161865234, Accu
racy = 0.9221004843711853
Iter #6344704: Learning rate = 0.000382:  Batch Loss = 0.424758, Accurac
y = 0.9453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5062896013259888, Accu
racy = 0.920187771320343
Iter #6348800: Learning rate = 0.000382:  Batch Loss = 0.440901, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.49443453550338745, Acc
uracy = 0.9274908900260925
Iter #6352896: Learning rate = 0.000382:  Batch Loss = 0.433629, Accurac
y = 0.95703125
PERFORMANCE ON TEST SET:          Batch Loss = 0.49735450744628906, Acc
uracy = 0.9273169636726379
Iter #6356992: Learning rate = 0.000382:  Batch Loss = 0.459374, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.5136657357215881, Accu
racy = 0.9154929518699646
Iter #6361088: Learning rate = 0.000382:  Batch Loss = 0.483214, Accurac
y = 0.9296875
PERFORMANCE ON TEST SET:          Batch Loss = 0.49596065282821655, Acc
uracy = 0.9299252033233643
Iter #6365184: Learning rate = 0.000382:  Batch Loss = 0.432361, Accurac
y = 0.953125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5088725686073303, Accu
racy = 0.918796718120575
Iter #6369280: Learning rate = 0.000382:  Batch Loss = 0.440131, Accurac
y = 0.947265625
```

PERFORMANCE ON TEST SET: Batch Loss = 0.49402183294296265, Accuracy = 0.9271430969238281  
Iter #6373376: Learning rate = 0.000382: Batch Loss = 0.470918, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5066940784454346, Accuracy = 0.9203616976737976  
Iter #6377472: Learning rate = 0.000382: Batch Loss = 0.447923, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5029664635658264, Accuracy = 0.9264475703239441  
Iter #6381568: Learning rate = 0.000382: Batch Loss = 0.445337, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.4974236488342285, Accuracy = 0.9257520437240601  
Iter #6385664: Learning rate = 0.000382: Batch Loss = 0.423290, Accuracy = 0.9609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5016387104988098, Accuracy = 0.928012490272522  
Iter #6389760: Learning rate = 0.000382: Batch Loss = 0.420264, Accuracy = 0.96484375  
PERFORMANCE ON TEST SET: Batch Loss = 0.49423131346702576, Accuracy = 0.9273169636726379  
Iter #6393856: Learning rate = 0.000382: Batch Loss = 0.446665, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.4922485947608948, Accuracy = 0.9292296767234802  
Iter #6397952: Learning rate = 0.000382: Batch Loss = 0.431712, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.49501436948776245, Accuracy = 0.928012490272522  
Iter #6402048: Learning rate = 0.000367: Batch Loss = 0.445939, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.4904397130012512, Accuracy = 0.9290558099746704  
Iter #6406144: Learning rate = 0.000367: Batch Loss = 0.470970, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.4905821979045868, Accuracy = 0.9292296767234802  
Iter #6410240: Learning rate = 0.000367: Batch Loss = 0.470235, Accuracy = 0.955078125  
PERFORMANCE ON TEST SET: Batch Loss = 0.49240392446517944, Accuracy = 0.9274908900260925  
Iter #6414336: Learning rate = 0.000367: Batch Loss = 0.439433, Accuracy = 0.962890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.487740159034729, Accuracy = 0.9294036030769348  
Iter #6418432: Learning rate = 0.000367: Batch Loss = 0.440221, Accuracy = 0.958984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.48263922333717346, Accuracy = 0.9300991296768188  
Iter #6422528: Learning rate = 0.000367: Batch Loss = 0.468261, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.4900127947330475, Accuracy = 0.9271430969238281  
Iter #6426624: Learning rate = 0.000367: Batch Loss = 0.422209, Accuracy = 0.9609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.4920993745326996, Accuracy = 0.9273169636726379  
Iter #6430720: Learning rate = 0.000367: Batch Loss = 0.439442, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.4856739640235901, Accuracy = 0.947265625

```
racy = 0.9309685230255127
Iter #6434816: Learning rate = 0.000367: Batch Loss = 0.441253, Accuracy = 0.9453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5079723000526428, Accuracy = 0.9227960109710693
Iter #6438912: Learning rate = 0.000367: Batch Loss = 0.471813, Accuracy = 0.939453125
PERFORMANCE ON TEST SET: Batch Loss = 0.5097109079360962, Accuracy = 0.9238393306732178
Iter #6443008: Learning rate = 0.000367: Batch Loss = 0.416902, Accuracy = 0.95703125
PERFORMANCE ON TEST SET: Batch Loss = 0.4974249601364136, Accuracy = 0.9255781769752502
Iter #6447104: Learning rate = 0.000367: Batch Loss = 0.456343, Accuracy = 0.9453125
PERFORMANCE ON TEST SET: Batch Loss = 0.49597057700157166, Accuracy = 0.9248826503753662
Iter #6451200: Learning rate = 0.000367: Batch Loss = 0.429893, Accuracy = 0.953125
PERFORMANCE ON TEST SET: Batch Loss = 0.4992607831954956, Accuracy = 0.919492244720459
Iter #6455296: Learning rate = 0.000367: Batch Loss = 0.454422, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.4886908531188965, Accuracy = 0.933576762676239
Iter #6459392: Learning rate = 0.000367: Batch Loss = 0.449776, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.4902576208114624, Accuracy = 0.9304468631744385
Iter #6463488: Learning rate = 0.000367: Batch Loss = 0.463891, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.4969994127750397, Accuracy = 0.9222744107246399
Iter #6467584: Learning rate = 0.000367: Batch Loss = 0.479573, Accuracy = 0.939453125
PERFORMANCE ON TEST SET: Batch Loss = 0.47934800386428833, Accuracy = 0.9398365616798401
Iter #6471680: Learning rate = 0.000367: Batch Loss = 0.466246, Accuracy = 0.9453125
PERFORMANCE ON TEST SET: Batch Loss = 0.488284707069397, Accuracy = 0.9269692301750183
Iter #6475776: Learning rate = 0.000367: Batch Loss = 0.452187, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.4936690032482147, Accuracy = 0.9287080764770508
Iter #6479872: Learning rate = 0.000367: Batch Loss = 0.429760, Accuracy = 0.958984375
PERFORMANCE ON TEST SET: Batch Loss = 0.4855777621269226, Accuracy = 0.9295774698257446
Iter #6483968: Learning rate = 0.000367: Batch Loss = 0.449006, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.4815685749053955, Accuracy = 0.9325334429740906
Iter #6488064: Learning rate = 0.000367: Batch Loss = 0.449325, Accuracy = 0.955078125
PERFORMANCE ON TEST SET: Batch Loss = 0.48492181301116943, Accuracy = 0.9360111355781555
Iter #6492160: Learning rate = 0.000367: Batch Loss = 0.473569, Accuracy = 0.94140625
PERFORMANCE ON TEST SET: Batch Loss = 0.4960833787918091, Accuracy = 0.9260998368263245
```

Iter #6496256: Learning rate = 0.000367: Batch Loss = 0.438097, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.48223361372947693, Accuracy = 0.9353156089782715  
Iter #6500352: Learning rate = 0.000352: Batch Loss = 0.405896, Accuracy = 0.9609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.4819631576538086, Accuracy = 0.9306207895278931  
Iter #6504448: Learning rate = 0.000352: Batch Loss = 0.489770, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.48764005303382874, Accuracy = 0.9307946562767029  
Iter #6508544: Learning rate = 0.000352: Batch Loss = 0.484129, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.48397183418273926, Accuracy = 0.9325334429740906  
Iter #6512640: Learning rate = 0.000352: Batch Loss = 0.416671, Accuracy = 0.95703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.4787813425064087, Accuracy = 0.9337506294250488  
Iter #6516736: Learning rate = 0.000352: Batch Loss = 0.456895, Accuracy = 0.9375  
PERFORMANCE ON TEST SET: Batch Loss = 0.47906243801116943, Accuracy = 0.932185709476471  
Iter #6520832: Learning rate = 0.000352: Batch Loss = 0.419420, Accuracy = 0.962890625  
PERFORMANCE ON TEST SET: Batch Loss = 0.48604798316955566, Accuracy = 0.9273169636726379  
Iter #6524928: Learning rate = 0.000352: Batch Loss = 0.457503, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5039175748825073, Accuracy = 0.9259259104728699  
Iter #6529024: Learning rate = 0.000352: Batch Loss = 0.444129, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.48757463693618774, Accuracy = 0.9273169636726379  
Iter #6533120: Learning rate = 0.000352: Batch Loss = 0.464601, Accuracy = 0.947265625  
PERFORMANCE ON TEST SET: Batch Loss = 0.49462607502937317, Accuracy = 0.9294036030769348  
Iter #6537216: Learning rate = 0.000352: Batch Loss = 0.445692, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.48320600390434265, Accuracy = 0.9281864166259766  
Iter #6541312: Learning rate = 0.000352: Batch Loss = 0.415814, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.47964614629745483, Accuracy = 0.9330551028251648  
Iter #6545408: Learning rate = 0.000352: Batch Loss = 0.473722, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.49038946628570557, Accuracy = 0.9327073693275452  
Iter #6549504: Learning rate = 0.000352: Batch Loss = 0.478613, Accuracy = 0.939453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.48820868134498596, Accuracy = 0.9300991296768188  
Iter #6553600: Learning rate = 0.000352: Batch Loss = 0.420544, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.4823552966117859, Accuracy = 0.9290558099746704  
Iter #6557696: Learning rate = 0.000352: Batch Loss = 0.426537, Accuracy =

```
y = 0.958984375
PERFORMANCE ON TEST SET:          Batch Loss = 0.483961820602417, Accur
acy = 0.9311423897743225
Iter #6561792: Learning rate = 0.000352: Batch Loss = 0.457072, Accurac
y = 0.9453125
PERFORMANCE ON TEST SET:          Batch Loss = 0.5039494037628174, Accu
racy = 0.9248826503753662
Iter #6565888: Learning rate = 0.000352: Batch Loss = 0.458534, Accurac
y = 0.943359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.49152928590774536, Acc
uracy = 0.9288819432258606
Iter #6569984: Learning rate = 0.000352: Batch Loss = 0.443734, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.49359166622161865, Acc
uracy = 0.9309685230255127
Iter #6574080: Learning rate = 0.000352: Batch Loss = 0.445463, Accurac
y = 0.943359375
PERFORMANCE ON TEST SET:          Batch Loss = 0.47526293992996216, Acc
uracy = 0.9353156089782715
Iter #6578176: Learning rate = 0.000352: Batch Loss = 0.433751, Accurac
y = 0.95703125
PERFORMANCE ON TEST SET:          Batch Loss = 0.49067842960357666, Acc
uracy = 0.9254042506217957
Iter #6582272: Learning rate = 0.000352: Batch Loss = 0.437683, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.4827089011669159, Accu
racy = 0.9309685230255127
Iter #6586368: Learning rate = 0.000352: Batch Loss = 0.418362, Accurac
y = 0.9609375
PERFORMANCE ON TEST SET:          Batch Loss = 0.48163485527038574, Acc
uracy = 0.9297513365745544
Iter #6590464: Learning rate = 0.000352: Batch Loss = 0.424748, Accurac
y = 0.96484375
PERFORMANCE ON TEST SET:          Batch Loss = 0.4784623086452484, Accu
racy = 0.934272289276123
Iter #6594560: Learning rate = 0.000352: Batch Loss = 0.414966, Accurac
y = 0.9609375
PERFORMANCE ON TEST SET:          Batch Loss = 0.47532474994659424, Acc
uracy = 0.9346200823783875
Iter #6598656: Learning rate = 0.000352: Batch Loss = 0.423112, Accurac
y = 0.958984375
PERFORMANCE ON TEST SET:          Batch Loss = 0.4746381640434265, Accu
racy = 0.9353156089782715
Iter #6602752: Learning rate = 0.000338: Batch Loss = 0.415477, Accurac
y = 0.95703125
PERFORMANCE ON TEST SET:          Batch Loss = 0.4713743329048157, Accu
racy = 0.9375760555267334
Iter #6606848: Learning rate = 0.000338: Batch Loss = 0.451693, Accurac
y = 0.95703125
PERFORMANCE ON TEST SET:          Batch Loss = 0.47667232155799866, Acc
uracy = 0.9334028959274292
Iter #6610944: Learning rate = 0.000338: Batch Loss = 0.434311, Accurac
y = 0.955078125
PERFORMANCE ON TEST SET:          Batch Loss = 0.4766879677772522, Accu
racy = 0.9361850023269653
Iter #6615040: Learning rate = 0.000338: Batch Loss = 0.429695, Accurac
y = 0.951171875
PERFORMANCE ON TEST SET:          Batch Loss = 0.488129585981369, Accur
acy = 0.9285341501235962
Iter #6619136: Learning rate = 0.000338: Batch Loss = 0.414107, Accurac
y = 0.953125
```

PERFORMANCE ON TEST SET: Batch Loss = 0.47235316038131714, Accuracy = 0.9367066621780396  
Iter #6623232: Learning rate = 0.000338: Batch Loss = 0.463162, Accuracy = 0.943359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.493997186422348, Accuracy = 0.9262737035751343  
Iter #6627328: Learning rate = 0.000338: Batch Loss = 0.435121, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.47775202989578247, Accuracy = 0.9307946562767029  
Iter #6631424: Learning rate = 0.000338: Batch Loss = 0.420820, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.47904324531555176, Accuracy = 0.932881236076355  
Iter #6635520: Learning rate = 0.000338: Batch Loss = 0.414482, Accuracy = 0.958984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.4913311004638672, Accuracy = 0.9264475703239441  
Iter #6639616: Learning rate = 0.000338: Batch Loss = 0.435272, Accuracy = 0.958984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.502052903175354, Accuracy = 0.925056517124176  
Iter #6643712: Learning rate = 0.000338: Batch Loss = 0.506858, Accuracy = 0.9296875  
PERFORMANCE ON TEST SET: Batch Loss = 0.5130656361579895, Accuracy = 0.9174056649208069  
Iter #6647808: Learning rate = 0.000338: Batch Loss = 0.466133, Accuracy = 0.93359375  
PERFORMANCE ON TEST SET: Batch Loss = 0.5024889707565308, Accuracy = 0.9266214370727539  
Iter #6651904: Learning rate = 0.000338: Batch Loss = 0.426875, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.48968350887298584, Accuracy = 0.9292296767234802  
Iter #6656000: Learning rate = 0.000338: Batch Loss = 0.454950, Accuracy = 0.9453125  
PERFORMANCE ON TEST SET: Batch Loss = 0.5063726902008057, Accuracy = 0.9247087240219116  
Iter #6660096: Learning rate = 0.000338: Batch Loss = 0.421057, Accuracy = 0.95703125  
PERFORMANCE ON TEST SET: Batch Loss = 0.4697577953338623, Accuracy = 0.9400104284286499  
Iter #6664192: Learning rate = 0.000338: Batch Loss = 0.453292, Accuracy = 0.953125  
PERFORMANCE ON TEST SET: Batch Loss = 0.47219154238700867, Accuracy = 0.9387932419776917  
Iter #6668288: Learning rate = 0.000338: Batch Loss = 0.450596, Accuracy = 0.951171875  
PERFORMANCE ON TEST SET: Batch Loss = 0.4865446984767914, Accuracy = 0.9316640496253967  
Iter #6672384: Learning rate = 0.000338: Batch Loss = 0.433707, Accuracy = 0.9609375  
PERFORMANCE ON TEST SET: Batch Loss = 0.48268651962280273, Accuracy = 0.9290558099746704  
Iter #6676480: Learning rate = 0.000338: Batch Loss = 0.395992, Accuracy = 0.958984375  
PERFORMANCE ON TEST SET: Batch Loss = 0.48073914647102356, Accuracy = 0.9334028959274292  
Iter #6680576: Learning rate = 0.000338: Batch Loss = 0.442772, Accuracy = 0.94921875  
PERFORMANCE ON TEST SET: Batch Loss = 0.4723953604698181, Accuracy = 0.94921875

```
racy = 0.9361850023269653
Iter #6684672: Learning rate = 0.000338: Batch Loss = 0.456496, Accuracy = 0.951171875
PERFORMANCE ON TEST SET: Batch Loss = 0.47172361612319946, Accuracy = 0.9354894757270813
Iter #6688768: Learning rate = 0.000338: Batch Loss = 0.432632, Accuracy = 0.9609375
PERFORMANCE ON TEST SET: Batch Loss = 0.4893532395362854, Accuracy = 0.9297513365745544
Iter #6692864: Learning rate = 0.000338: Batch Loss = 0.425106, Accuracy = 0.95703125
PERFORMANCE ON TEST SET: Batch Loss = 0.47167110443115234, Accuracy = 0.9353156089782715
Iter #6696960: Learning rate = 0.000338: Batch Loss = 0.437546, Accuracy = 0.955078125
PERFORMANCE ON TEST SET: Batch Loss = 0.4762731194496155, Accuracy = 0.9318379163742065
Iter #6701056: Learning rate = 0.000324: Batch Loss = 0.402216, Accuracy = 0.96484375
PERFORMANCE ON TEST SET: Batch Loss = 0.47363904118537903, Accuracy = 0.9393149018287659
Iter #6705152: Learning rate = 0.000324: Batch Loss = 0.444746, Accuracy = 0.955078125
PERFORMANCE ON TEST SET: Batch Loss = 0.46923837065696716, Accuracy = 0.9363588690757751
Iter #6709248: Learning rate = 0.000324: Batch Loss = 0.422576, Accuracy = 0.95703125
PERFORMANCE ON TEST SET: Batch Loss = 0.47649168968200684, Accuracy = 0.9349678158760071
Iter #6713344: Learning rate = 0.000324: Batch Loss = 0.441049, Accuracy = 0.955078125
PERFORMANCE ON TEST SET: Batch Loss = 0.48506689071655273, Accuracy = 0.9353156089782715
Iter #6717440: Learning rate = 0.000324: Batch Loss = 0.375958, Accuracy = 0.978515625
PERFORMANCE ON TEST SET: Batch Loss = 0.47026699781417847, Accuracy = 0.9367066621780396
Iter #6721536: Learning rate = 0.000324: Batch Loss = 0.435317, Accuracy = 0.955078125
PERFORMANCE ON TEST SET: Batch Loss = 0.47082674503326416, Accuracy = 0.9339245557785034
Iter #6725632: Learning rate = 0.000324: Batch Loss = 0.442027, Accuracy = 0.958984375
PERFORMANCE ON TEST SET: Batch Loss = 0.47531524300575256, Accuracy = 0.9361850023269653
Iter #6729728: Learning rate = 0.000324: Batch Loss = 0.424630, Accuracy = 0.94921875
PERFORMANCE ON TEST SET: Batch Loss = 0.47933024168014526, Accuracy = 0.9332290291786194
Iter #6733824: Learning rate = 0.000324: Batch Loss = 0.436801, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.4795084595680237, Accuracy = 0.9365327954292297
Iter #6737920: Learning rate = 0.000324: Batch Loss = 0.441604, Accuracy = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.47667160630226135, Accuracy = 0.9351417422294617
Iter #6742016: Learning rate = 0.000324: Batch Loss = 0.455511, Accuracy = 0.943359375
PERFORMANCE ON TEST SET: Batch Loss = 0.4873870015144348, Accuracy = 0.9297513365745544
```



```
Iter #6746112: Learning rate = 0.000324: Batch Loss = 0.431150, Accuracy = 0.96484375
PERFORMANCE ON TEST SET: Batch Loss = 0.484703928232193, Accuracy = 0.9302729964256287
Iter #6750208: Learning rate = 0.000324: Batch Loss = 0.421037, Accuracy = 0.958984375
PERFORMANCE ON TEST SET: Batch Loss = 0.4833904206752777, Accuracy = 0.9327073693275452
Iter #6754304: Learning rate = 0.000324: Batch Loss = 0.430378, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.47095876932144165, Accuracy = 0.9363588690757751
Iter #6758400: Learning rate = 0.000324: Batch Loss = 0.420464, Accuracy = 0.95703125
PERFORMANCE ON TEST SET: Batch Loss = 0.4710622727870941, Accuracy = 0.9387932419776917
Iter #6762496: Learning rate = 0.000324: Batch Loss = 0.439891, Accuracy = 0.947265625
PERFORMANCE ON TEST SET: Batch Loss = 0.48006874322891235, Accuracy = 0.934272289276123
Iter #6766592: Learning rate = 0.000324: Batch Loss = 0.414409, Accuracy = 0.97265625
PERFORMANCE ON TEST SET: Batch Loss = 0.47117555141448975, Accuracy = 0.9344461560249329
Iter #6770688: Learning rate = 0.000324: Batch Loss = 0.425943, Accuracy = 0.9609375
PERFORMANCE ON TEST SET: Batch Loss = 0.47087913751602173, Accuracy = 0.934272289276123
Iter #6774784: Learning rate = 0.000324: Batch Loss = 0.434474, Accuracy = 0.953125
PERFORMANCE ON TEST SET: Batch Loss = 0.46955859661102295, Accuracy = 0.9386193752288818
Iter #6778880: Learning rate = 0.000324: Batch Loss = 0.445946, Accuracy = 0.9453125
PERFORMANCE ON TEST SET: Batch Loss = 0.4709849953651428, Accuracy = 0.932881236076355
Iter #6782976: Learning rate = 0.000324: Batch Loss = 0.419295, Accuracy = 0.958984375
PERFORMANCE ON TEST SET: Batch Loss = 0.47014737129211426, Accuracy = 0.9398365616798401
Iter #6787072: Learning rate = 0.000324: Batch Loss = 0.439174, Accuracy = 0.935546875
PERFORMANCE ON TEST SET: Batch Loss = 0.4663558900356293, Accuracy = 0.938445508480072
Optimization Finished!
FINAL RESULT: Batch Loss = 0.4663558900356293, Accuracy = 0.938445508480072
TOTAL TIME: 7346.106528043747
```

## Results:

In [12]:

```

# (Inline plots: )
%matplotlib inline

font = {
    'family' : 'DejaVu Sans',
    'weight' : 'bold',
    'size' : 18
}
matplotlib.rc('font', **font)

width = 12
height = 12
plt.figure(figsize=(width, height))

indep_train_axis = np.array(range(batch_size, (len(train_losses)+1)*batch_size, batch_size))
#plt.plot(indep_train_axis, np.array(train_losses), "b--", label="Train losses")
plt.plot(indep_train_axis, np.array(train_accuracies), "g--", label="Train accuracies")

indep_test_axis = np.append(
    np.array(range(batch_size, len(test_losses)*display_iter, display_iter)[: -1]),
    [training_iters]
)
#plt.plot(indep_test_axis, np.array(test_losses), "b-", linewidth=2.0, label="Test losses")
plt.plot(indep_test_axis, np.array(test_accuracies), "b-", linewidth=2.0, label="Test accuracies")
print(len(test_accuracies))
print(len(train_accuracies))

plt.title("Training session's Accuracy over Iterations")
plt.legend(loc='lower right', shadow=True)
plt.ylabel('Training Accuracy')
plt.xlabel('Training Iteration')

plt.show()

# Results

predictions = one_hot_predictions.argmax(1)

print("Testing Accuracy: {}".format(100*accuracy))

print("")
print("Precision: {}".format(100*metrics.precision_score(y_test, predictions, average="weighted")))
print("Recall: {}".format(100*metrics.recall_score(y_test, predictions, average="weighted")))
print("f1_score: {}".format(100*metrics.f1_score(y_test, predictions, average="weighted")))

print("")
print("Confusion Matrix:")
print("Created using test set of {} datapoints, normalised to % of each class in the test dataset".format(len(y_test)))
confusion_matrix = metrics.confusion_matrix(y_test, predictions)

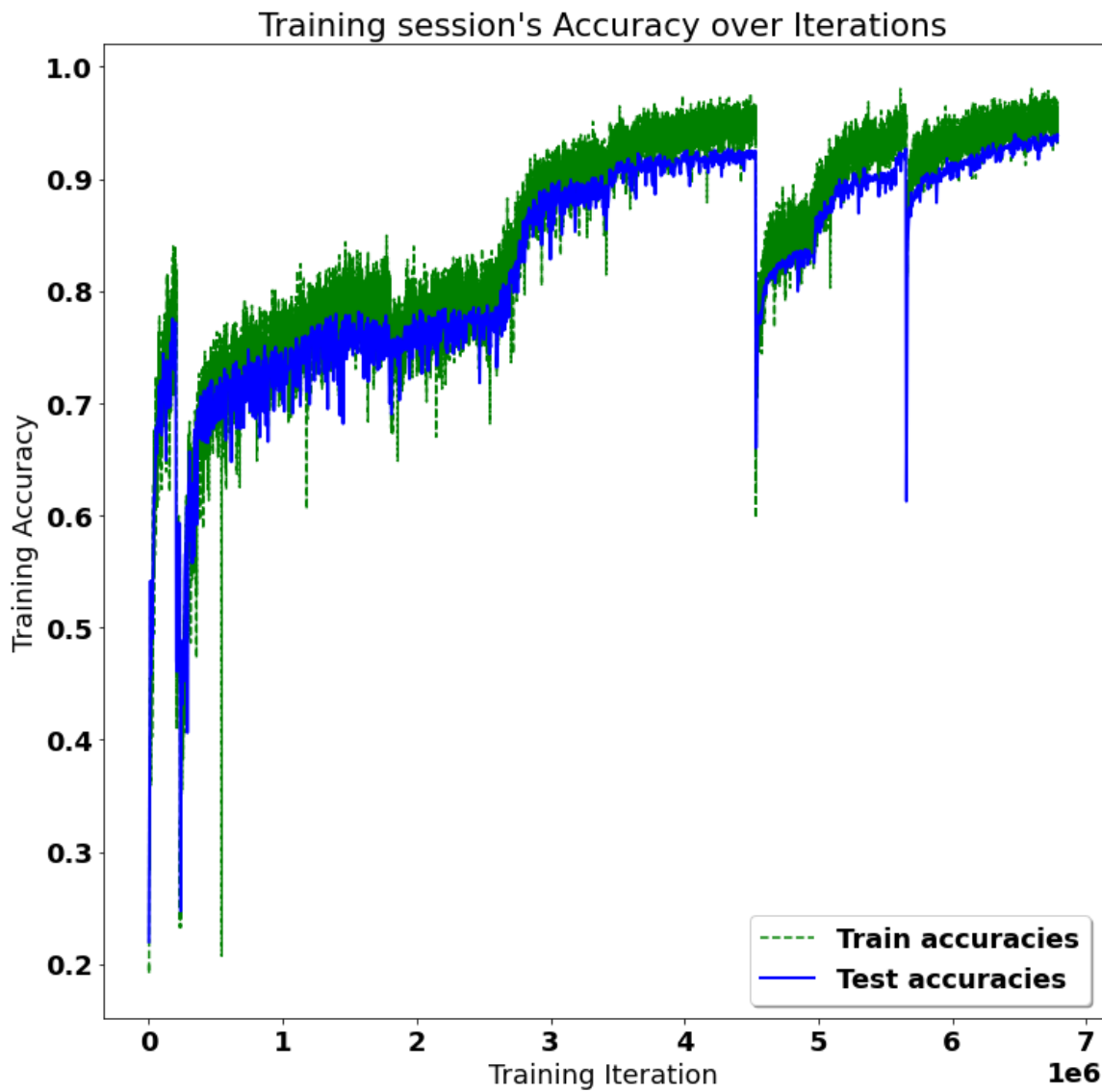
#print(confusion_matrix)

```

```
normalised_confusion_matrix = np.array(confusion_matrix, dtype=np.float32)/np.sum(confusion_matrix)*100

# Plot Results:
width = 12
height = 12
plt.figure(figsize=(width, height))
plt.imshow(
    normalised_confusion_matrix,
    interpolation='nearest',
    cmap=plt.cm.Blues
)
plt.title("Confusion matrix \n(normalised to % of total test data)")
plt.colorbar()
tick_marks = np.arange(n_classes)
plt.xticks(tick_marks, LABELS, rotation=90)
plt.yticks(tick_marks, LABELS)
plt.tight_layout()
plt.ylabel('True label')
plt.xlabel('Predicted label')
plt.show()
```

1659  
13256



Testing Accuracy: 93.8445508480072%

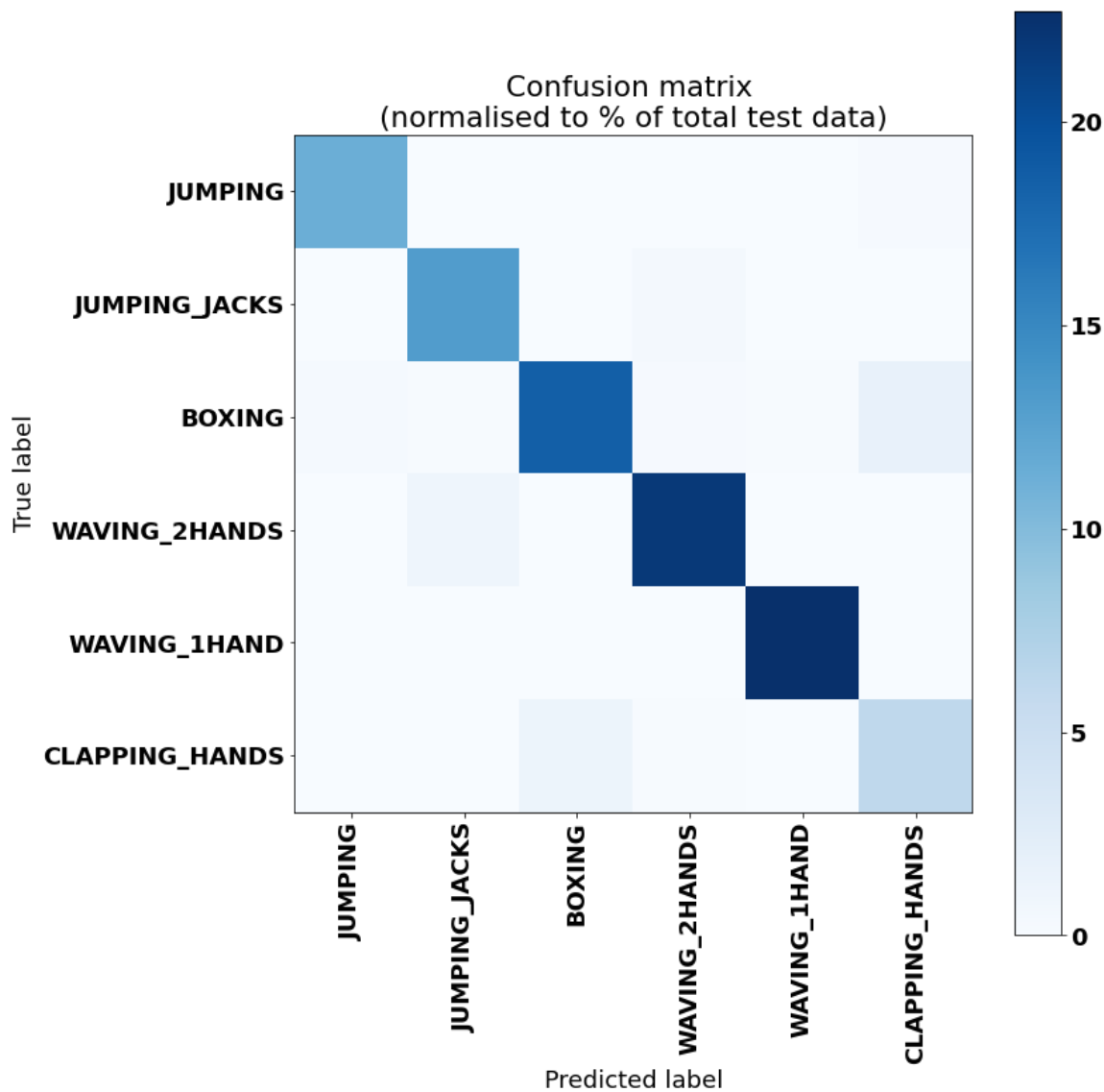
Precision: 93.92252364700282%

Recall: 93.84454877412624%

f1\_score: 93.8566063331221%

Confusion Matrix:

Created using test set of 5751 datapoints, normalised to % of each class in the test dataset



In [13]:

```
X_val_path = DATASET_PATH + "X_val.txt"
X_val = load_X(X_val_path)
print(X_val)
```

```
preds = sess.run(
    [pred],
    feed_dict={
        x: X_val
    }
)
```

```
print(preds)
```

```
[[[307.589 162.976 319.364 ... 0. 329.752 161.651]
 [307.567 162.979 319.362 ... 0. 328.527 161.655]
 [306.298 162.951 319.351 ... 0. 328.495 161.681]
 ...
 [293.291 122.534 307.676 ... 128.953 315.438 119.884]
 [289.392 140.743 307.615 ... 0. 315.393 139.408]
 [295.848 161.658 307.628 ... 160.331 314.112 160.264]]]
[array([[ 5.2737584 , -1.9157512 ,  0.22798854, -2.9608133 , -1.660554 ,
          0.86934733]], dtype=float32)]
```

In [15]:

```
#sess.close()  
print(test accuracies)
```

[0.21978787, 0.34307078, 0.4336637, 0.54164493, 0.45852897, 0.5367762, 0.4905234, 0.5263432, 0.5722483, 0.6167623, 0.6131108, 0.62980354, 0.65658146, 0.6784907, 0.6548426, 0.6701443, 0.68579376, 0.6877065, 0.69918275, 0.7160494, 0.6746653, 0.72004867, 0.71013737, 0.6715354, 0.689967, 0.7089202, 0.74404454, 0.7292645, 0.71257174, 0.7348287, 0.7040515, 0.6491045, 0.7304817, 0.7381325, 0.6974439, 0.7115284, 0.69605285, 0.7221353, 0.6967484, 0.7209181, 0.7541297, 0.73500264, 0.76073724, 0.7753434, 0.753782, 0.7576074, 0.72996, 0.76577985, 0.7703008, 0.771518, 0.47087464, 0.46078944, 0.47174403, 0.5433838, 0.59294033, 0.55972874, 0.59276646, 0.32116154, 0.24726135, 0.44983482, 0.4682664, 0.43157712, 0.48495913, 0.48913231, 0.45244306, 0.5425143, 0.56564075, 0.56477135, 0.58181185, 0.6077204, 0.40619022, 0.5663363, 0.6271953, 0.6318901, 0.6567553, 0.6504956, 0.5772909, 0.6016345, 0.62858635, 0.5574683, 0.59276646, 0.5884194, 0.5633803, 0.632064, 0.676578, 0.6270214, 0.68301165, 0.5917232, 0.67170924, 0.6746653, 0.6944879, 0.6685794, 0.6957051, 0.6922274, 0.7061381, 0.7009216, 0.69170576, 0.66684055, 0.68022954, 0.6887498, 0.69953054, 0.7111807, 0.6967484, 0.66527563, 0.7064858, 0.7005738, 0.70022607, 0.664754, 0.713615, 0.6934446, 0.69118416, 0.6715354, 0.7179621, 0.7120501, 0.72039646, 0.7123979, 0.68335944, 0.6772735, 0.6837072, 0.69327074, 0.68179446, 0.707703, 0.68266386, 0.71535385, 0.69918275, 0.6977917, 0.6937924, 0.69796556, 0.68492436, 0.7170927, 0.7226569, 0.69831336, 0.695879, 0.6868371, 0.7080508, 0.7170927, 0.7087463, 0.70387757, 0.7304817, 0.6704921, 0.6670144, 0.6704921, 0.7249174, 0.71813595, 0.7118762, 0.72126585, 0.7191793, 0.71761435, 0.6915319, 0.71048516, 0.6477134, 0.7205703, 0.7040515, 0.72996, 0.71726656, 0.734481, 0.6936185, 0.727004, 0.7257868, 0.7369153, 0.6776213, 0.72248304, 0.70422536, 0.71222395, 0.72961223, 0.6896192, 0.67709965, 0.72039646, 0.6937924, 0.7238741, 0.6998783, 0.69831336, 0.6950096, 0.67831683, 0.7330899, 0.72874284, 0.72961223, 0.70109546, 0.7261346, 0.73239434, 0.7155277, 0.74769604, 0.73587203, 0.710659, 0.6930969, 0.7308294, 0.7330899, 0.73569816, 0.7080508, 0.688402, 0.73030776, 0.6997044, 0.7280473, 0.73552424, 0.6863154, 0.73239434, 0.72874284, 0.69240135, 0.7407407, 0.74161017, 0.73587203, 0.738828, 0.6697966, 0.7308294, 0.70509475, 0.72439575, 0.7316988, 0.72648233, 0.73743695, 0.69240135, 0.7431751, 0.7509998, 0.7332638, 0.6804034, 0.74056685, 0.73569816, 0.7089202, 0.66579723, 0.71013737, 0.72352636, 0.73343766, 0.72717786, 0.7398713, 0.7290906, 0.7457833, 0.7143105, 0.7400452, 0.72717786, 0.69327074, 0.7099635, 0.7475222, 0.7501304, 0.7421318, 0.71570164, 0.7435229, 0.73500264, 0.73778474, 0.71048516, 0.740393, 0.7423057, 0.7155277, 0.74491394, 0.7370892, 0.7339593, 0.7320466, 0.69883496, 0.7372631, 0.6927491, 0.7442184, 0.7489132, 0.7457833, 0.71726656, 0.72352636, 0.7313511, 0.72961223, 0.73256826, 0.7332638, 0.7313511, 0.7473483, 0.7490871, 0.7407407, 0.74769604, 0.69101024, 0.7395236, 0.7155277, 0.7438706, 0.7363937, 0.7442184, 0.74682665, 0.75778127, 0.7146583, 0.7497826, 0.74682665, 0.7273518, 0.7186576, 0.7360459, 0.6974439, 0.7383064, 0.75273865, 0.74526167, 0.75899845, 0.75482523, 0.73552424, 0.7520431, 0.7509998, 0.7600417, 0.75308645, 0.71048516, 0.73378545, 0.7520431, 0.7475222, 0.75586855, 0.75952005, 0.6990089, 0.7310033, 0.7605634, 0.7541297, 0.76804036, 0.7544775, 0.7591723, 0.7563902, 0.7226569, 0.7202226, 0.76421493, 0.7381325, 0.7572596, 0.7650843, 0.76386714, 0.76977915, 0.7485655, 0.72596073, 0.7633455, 0.76977915, 0.7600417, 0.75552076, 0.759694, 0.752217, 0.74056685, 0.76386714, 0.7276995, 0.7690836, 0.73500264, 0.71952707, 0.7753434, 0.7749956, 0.734481, 0.69483566, 0.7556947, 0.75865066, 0.7308294, 0.77638674, 0.77708226, 0.7494349, 0.75552076, 0.73865414, 0.76421493, 0.771518, 0.7198748, 0.7696053, 0.7450878, 0.7706486, 0.7795166, 0.73239434, 0.74143624, 0.7443923, 0.71639717, 0.7410885, 0.7553469, 0.68927145, 0.7628239, 0.7593462, 0.7659537, 0.7351765, 0.7725613, 0.68179446, 0.76421493, 0.7395236, 0.77395236, 0.77169186, 0.7784733, 0.73934966, 0.7426534, 0.7704747, 0.74769604, 0.7543036, 0.7781255, 0.77829945, 0.7525648, 0.76577985, 0.75047815, 0.753782, 0.75047815, 0.74282736, 0.77117026, 0.76264995, 0.7569118, 0.7541297, 0.7494349, 0.764041, 0.74995655, 0.74491394, 0.76108503, 0.7814293, 0.773083, 0.7654321, 0.7737785, 0.774474, 0.74456614, 0.77916884, 0.74804384, 0.7543036, 0.7569118, 0.7221353, 0.7636933, 0.75795513, 0.76143277, 0.77099633,

0.77082247, 0.74334896, 0.7758651, 0.7191793, 0.7703008, 0.7471744, 0.7668232, 0.73587203, 0.76299775, 0.7489132, 0.7706486, 0.7675187, 0.7736046, 0.73430705, 0.7501304, 0.76804036, 0.7593462, 0.77290905, 0.7664754, 0.75465137, 0.72961223, 0.74804384, 0.74960876, 0.7313511, 0.76890975, 0.73848027, 0.76212835, 0.7473483, 0.76143277, 0.7663015, 0.74647886, 0.73865414, 0.7713441, 0.75186926, 0.74804384, 0.7781255, 0.7419579, 0.75239086, 0.75899845, 0.76456267, 0.7690836, 0.7391758, 0.6998783, 0.7188315, 0.75586855, 0.6903147, 0.7186576, 0.7489132, 0.7442184, 0.75708574, 0.7562163, 0.7419579, 0.7461311, 0.749261, 0.7410885, 0.7544775, 0.7593462, 0.7330899, 0.73969746, 0.7525648, 0.7028343, 0.7576074, 0.75360805, 0.7543036, 0.75465137, 0.74560946, 0.7543036, 0.75465137, 0.759694, 0.76386714, 0.7683881, 0.74769604, 0.7612589, 0.76021564, 0.7643888, 0.7683881, 0.7623022, 0.73343766, 0.72161365, 0.759694, 0.7633455, 0.7690836, 0.74995655, 0.75360805, 0.7400452, 0.7736046, 0.77882105, 0.77516955, 0.75082594, 0.7501304, 0.77325684, 0.7572596, 0.7485655, 0.7565641, 0.7593462, 0.7652582, 0.75482523, 0.7426534, 0.7826465, 0.7471744, 0.7703008, 0.72648233, 0.7793427, 0.7623022, 0.7703008, 0.7532603, 0.771518, 0.7687359, 0.76769257, 0.7706486, 0.73500264, 0.7623022, 0.72874284, 0.77743, 0.76577985, 0.7654321, 0.74769604, 0.74839157, 0.7520431, 0.7758651, 0.7722135, 0.75465137, 0.7723874, 0.7663015, 0.7482177, 0.77638674, 0.76091117, 0.7461311, 0.7336115, 0.746305, 0.7478699, 0.78195095, 0.773083, 0.76734483, 0.755173, 0.7668232, 0.7633455, 0.77395236, 0.774474, 0.783342, 0.7723874, 0.76786643, 0.773083, 0.78403753, 0.7623022, 0.74839157, 0.76491046, 0.74491394, 0.7706486, 0.7699531, 0.75465137, 0.7541297, 0.771518, 0.7605634, 0.7584768, 0.7796905, 0.771518, 0.7765606, 0.7443923, 0.7829943, 0.78003824, 0.7513476, 0.7628239, 0.76073724, 0.7765606, 0.768562, 0.7749956, 0.77169186, 0.74769604, 0.78195095, 0.7584768, 0.7619544, 0.76299775, 0.77099633, 0.77290905, 0.77082247, 0.7490871, 0.7633455, 0.7784733, 0.774474, 0.77117026, 0.7544775, 0.77290905, 0.77325684, 0.7765606, 0.7777778, 0.77290905, 0.77395236, 0.7812554, 0.7796905, 0.77203965, 0.7814293, 0.77082247, 0.7798644, 0.78108156, 0.78542864, 0.75708574, 0.7758651, 0.76143277, 0.7786472, 0.7777778, 0.7737785, 0.7796905, 0.77203965, 0.784907, 0.7758651, 0.71813595, 0.7633455, 0.76612765, 0.773083, 0.76091117, 0.77829945, 0.7683881, 0.7574335, 0.7569118, 0.77882105, 0.7696053, 0.7798644, 0.7718658, 0.77829945, 0.78716743, 0.78351593, 0.75273865, 0.7619544, 0.7438706, 0.7543036, 0.74995655, 0.7793427, 0.78038603, 0.7798644, 0.77117026, 0.7795166, 0.76456267, 0.7633455, 0.78108156, 0.7856025, 0.7845592, 0.73187274, 0.7442184, 0.7746479, 0.7737785, 0.784907, 0.7809077, 0.78786296, 0.7699531, 0.8002087, 0.759694, 0.7845592, 0.7864719, 0.80594677, 0.79307944, 0.7650843, 0.7998609, 0.7889063, 0.7786472, 0.7725613, 0.8045557, 0.7974265, 0.8017736, 0.77638674, 0.80942446, 0.8167275, 0.81116325, 0.81185883, 0.818988, 0.80907667, 0.8076856, 0.81533647, 0.798176, 0.81864023, 0.82281345, 0.8210746, 0.80559903, 0.8266388, 0.8080334, 0.7986437, 0.80872893, 0.8313337, 0.841245, 0.8447226, 0.8388106, 0.8254217, 0.8292471, 0.84281, 0.8365502, 0.8309859, 0.8624587, 0.8450704, 0.82559556, 0.83985394, 0.8391584, 0.84176666, 0.8657625, 0.847157, 0.8676752, 0.86976177, 0.87410885, 0.8603721, 0.8706312, 0.87132674, 0.86384976, 0.8648931, 0.86471915, 0.84854805, 0.8513302, 0.8810642, 0.8699357, 0.87132674, 0.86193705, 0.87619543, 0.8589811, 0.8695879, 0.86071986, 0.868023, 0.8702834, 0.85515565, 0.888715, 0.8754999, 0.8615893, 0.841245, 0.8577639, 0.8836724, 0.86611027, 0.8845418, 0.8901061, 0.87532604, 0.8848896, 0.8855851, 0.8841941, 0.87219614, 0.87602156, 0.8873239, 0.8572422, 0.8735872, 0.8786298, 0.82837766, 0.87689096, 0.8786298, 0.8958442, 0.8542862, 0.8838463, 0.88402015, 0.8603721, 0.89149714, 0.89306206, 0.8765432, 0.8786298, 0.8948009, 0.8873239, 0.88628066, 0.8970614, 0.8979308, 0.8706312, 0.8688924, 0.87132674, 0.87410885, 0.85046077, 0.8880195, 0.88749784, 0.8880195, 0.88123804, 0.8688924, 0.89219266, 0.8899322, 0.8788037, 0.89027995, 0.8873239, 0.8748044, 0.8904538, 0.88715005, 0.8939315, 0.88228136, 0.89932185, 0.87915146, 0.8873239, 0.8928882, 0.8779343, 0.89532256, 0.8765432, 0.88193357, 0.85289514, 0.86628413, 0.8838463, 0.88506347, 0.8968875, 0.89149714, 0.8767171, 0.8954964, 0.8775865, 0.88315076, 0.8920188, 0.8868023, 0.8951487, 0.8786298, 0.8796731, 0.89462703, 0.8895844, 0.87532604, 0.89306206,



0.893236, 0.8814119, 0.88123804, 0.8796731, 0.8967136, 0.89653975, 0.8836724, 0.87323946, 0.89184487, 0.8751522, 0.88210744, 0.88836724, 0.8998435, 0.9008868, 0.88819337, 0.88193357, 0.89254045, 0.8833246, 0.9007129, 0.8742827, 0.89740914, 0.89619195, 0.8935837, 0.88819337, 0.8817597, 0.885759, 0.8948009, 0.88349855, 0.88506347, 0.9026256, 0.88941056, 0.89254045, 0.8742827, 0.888715, 0.86784905, 0.8869762, 0.87254393, 0.8941054, 0.854634, 0.8770649, 0.8748044, 0.87723875, 0.8829769, 0.8937576, 0.9010607, 0.90836376, 0.9010607, 0.9040167, 0.8970614, 0.89306206, 0.8951487, 0.90019125, 0.9057555, 0.8967136, 0.9022779, 0.9017562, 0.9113198, 0.9118414, 0.9090593, 0.91462356, 0.90558165, 0.910972, 0.9099287, 0.9062772, 0.90749437, 0.9151452, 0.91149366, 0.90923315, 0.9099287, 0.8963658, 0.9069727, 0.912537, 0.9116675, 0.91149366, 0.90645105, 0.91271085, 0.9101026, 0.91671014, 0.9181012, 0.9099287, 0.8988002, 0.8941054, 0.90053904, 0.9066249, 0.88941056, 0.9134064, 0.90836376, 0.90332115, 0.91045034, 0.9088854, 0.9099287, 0.8948009, 0.8824552, 0.90366894, 0.90958095, 0.90836376, 0.92262214, 0.9121892, 0.9094071, 0.91984004, 0.9113198, 0.9066249, 0.9121892, 0.90645105, 0.9085376, 0.9116675, 0.9113198, 0.9134064, 0.916884, 0.908016, 0.89427924, 0.9062772, 0.90836376, 0.918449, 0.91149366, 0.9062772, 0.9156668, 0.91427577, 0.91949224, 0.91549295, 0.9149713, 0.8986263, 0.89462703, 0.89445317, 0.9102765, 0.9088854, 0.91462356, 0.88628066, 0.9113198, 0.91862285, 0.9137541, 0.9191445, 0.91862285, 0.9121892, 0.9141019, 0.9215789, 0.91271085, 0.910972, 0.9027995, 0.9147974, 0.90679884, 0.91062427, 0.9160146, 0.90523386, 0.9196662, 0.9172318, 0.9128847, 0.9121892, 0.91462356, 0.91149366, 0.9149713, 0.91584074, 0.91271085, 0.91671014, 0.9137541, 0.910972, 0.9048861, 0.9066249, 0.9132325, 0.90679884, 0.9022779, 0.90366894, 0.9031473, 0.91045034, 0.9113198, 0.9181012, 0.9161885, 0.91757953, 0.9165363, 0.91671014, 0.91444963, 0.91114587, 0.90749437, 0.90436447, 0.91271085, 0.91584074, 0.92140496, 0.91862285, 0.9212311, 0.91584074, 0.916884, 0.9241871, 0.9179273, 0.9219266, 0.9149713, 0.9252304, 0.9141019, 0.90749437, 0.9034951, 0.9187967, 0.8937576, 0.91584074, 0.9193184, 0.91636235, 0.91062427, 0.91949224, 0.9121892, 0.9118414, 0.9149713, 0.9172318, 0.92175275, 0.9201878, 0.9221005, 0.92453486, 0.91705793, 0.9219266, 0.9141019, 0.91427577, 0.9057555, 0.9179273, 0.9156668, 0.9160146, 0.9156668, 0.91775346, 0.9193184, 0.918449, 0.91827506, 0.91045034, 0.9196662, 0.9101026, 0.9149713, 0.91236305, 0.9179273, 0.9085376, 0.90558165, 0.9156668, 0.91462356, 0.91740566, 0.92383933, 0.91775346, 0.92262214, 0.9191445, 0.91079813, 0.9134064, 0.91271085, 0.9224483, 0.92575204, 0.9193184, 0.9181012, 0.91549295, 0.9187967, 0.9224483, 0.91462356, 0.9128847, 0.9137541, 0.9200139, 0.9172318, 0.9165363, 0.9022779, 0.92175275, 0.91949224, 0.9099287, 0.91584074, 0.9241871, 0.924361, 0.91584074, 0.9196662, 0.9222744, 0.9231438, 0.92366546, 0.92662144, 0.9219266, 0.91271085, 0.91705793, 0.9231438, 0.91671014, 0.9212311, 0.9259259, 0.9193184, 0.9203617, 0.91444963, 0.9156668, 0.92296994, 0.91984004, 0.91949224, 0.91358024, 0.91444963, 0.9151452, 0.9147974, 0.92453486, 0.9200139, 0.92488265, 0.9147974, 0.9196662, 0.91775346, 0.91271085, 0.92349154, 0.91862285, 0.92070943, 0.90732044, 0.91584074, 0.9233177, 0.92349154, 0.9210572, 0.92488265, 0.924361, 0.91862285, 0.92488265, 0.92383933, 0.922796, 0.91775346, 0.92488265, 0.9215789, 0.92366546, 0.92453486, 0.91984004, 0.918449, 0.9241871, 0.9233177, 0.92262214, 0.92488265, 0.6600591, 0.72874284, 0.7254391, 0.7643888, 0.77412623, 0.7734307, 0.77882105, 0.771518, 0.77099633, 0.7816032, 0.7758651, 0.7836898, 0.78786296, 0.7965571, 0.7955138, 0.8036863, 0.80351245, 0.80542517, 0.7976004, 0.80438185, 0.8113372, 0.8073379, 0.8073379, 0.8095983, 0.81220657, 0.81551033, 0.8132499, 0.81220657, 0.8170753, 0.8149887, 0.81116325, 0.8132499, 0.81777084, 0.8198574, 0.8198574, 0.8073379, 0.8191619, 0.8163798, 0.8226395, 0.8240306, 0.82211787, 0.82020515, 0.8250739, 0.82281345, 0.82020515, 0.8240306, 0.82455224, 0.821944, 0.8275083, 0.8226395, 0.8254217, 0.82681274, 0.8226395, 0.8210746, 0.816032, 0.81933576, 0.8250739, 0.82802993, 0.821944, 0.8231612, 0.82872546, 0.83168143, 0.8226395, 0.8212485, 0.82455224, 0.82368284, 0.8226395, 0.8243784, 0.83394194, 0.82994264, 0.82994264, 0.8341158, 0.8313337, 0.8297687, 0.835333, 0.8292471, 0.7998609, 0.8129021, 0.80907667, 0.82646495, 0.83585465, 0.821944, 0.8262911, 0.83550686, 0.8332464,

0.8222918, 0.8328986, 0.82159626, 0.8313337, 0.8365502, 0.83237696, 0.83707184, 0.83359414, 0.8328986, 0.823509, 0.82768214, 0.8362024, 0.82837766, 0.83150756, 0.83046424, 0.83185536, 0.8320292, 0.8313337, 0.83168143, 0.83081204, 0.8292471, 0.82524776, 0.8384629, 0.85289514, 0.85689443, 0.86628413, 0.8586333, 0.8534168, 0.8615893, 0.86419755, 0.8648931, 0.8704573, 0.85202575, 0.8692401, 0.86819685, 0.8574161, 0.8695879, 0.86611027, 0.86419755, 0.86663187, 0.8794992, 0.8683707, 0.86541474, 0.87219614, 0.8685446, 0.86941403, 0.8754999, 0.87289166, 0.8735872, 0.87219614, 0.8702834, 0.8763693, 0.88315076, 0.8704573, 0.8767171, 0.88402015, 0.8735872, 0.88315076, 0.88315076, 0.8836724, 0.8909755, 0.8920188, 0.8935837, 0.8888889, 0.8876717, 0.88436794, 0.8869762, 0.89932185, 0.8880195, 0.8901061, 0.8746305, 0.89114934, 0.8941054, 0.88906276, 0.8935837, 0.88123804, 0.8888889, 0.8988002, 0.8873239, 0.89845246, 0.8937576, 0.88819337, 0.8937576, 0.8826291, 0.8939315, 0.8941054, 0.89062774, 0.8892366, 0.89340985, 0.8967136, 0.89445317, 0.8864545, 0.8909755, 0.9048861, 0.8963658, 0.8960181, 0.9040167, 0.8948009, 0.90053904, 0.89445317, 0.89619195, 0.89340985, 0.86941403, 0.8895844, 0.893236, 0.8868023, 0.8939315, 0.8847157, 0.89966965, 0.8923665, 0.8979308, 0.89462703, 0.90958095, 0.8988002, 0.89532256, 0.90366894, 0.8928882, 0.8899322, 0.89219266, 0.9031473, 0.8970614, 0.89740914, 0.9017562, 0.9029734, 0.90019125, 0.8986263, 0.89845246, 0.9008868, 0.8986263, 0.89827853, 0.8989741, 0.90332115, 0.8994957, 0.9040167, 0.9031473, 0.90123457, 0.9000174, 0.8968875, 0.89254045, 0.88436794, 0.8951487, 0.89114934, 0.89740914, 0.90523386, 0.8979308, 0.9010607, 0.8967136, 0.9048861, 0.9027995, 0.9047122, 0.9031473, 0.8876717, 0.89810467, 0.8951487, 0.8979308, 0.90366894, 0.9059294, 0.9003652, 0.90140843, 0.90366894, 0.9048861, 0.8904538, 0.9071466, 0.908016, 0.9057555, 0.9034951, 0.90053904, 0.9066249, 0.90923315, 0.89445317, 0.91271085, 0.9189706, 0.91584074, 0.91271085, 0.918449, 0.918449, 0.9165363, 0.92349154, 0.91705793, 0.9069727, 0.91462356, 0.9196662, 0.92140496, 0.9212311, 0.9224483, 0.9201878, 0.92296994, 0.91740566, 0.92696923, 0.6125891, 0.7170927, 0.8341158, 0.8509824, 0.86106765, 0.87254393, 0.8748044, 0.8751522, 0.8668058, 0.8876717, 0.8751522, 0.88280296, 0.8796731, 0.88089025, 0.8817597, 0.88402015, 0.8897583, 0.8899322, 0.8829769, 0.89027995, 0.8904538, 0.8935837, 0.89149714, 0.89427924, 0.8885411, 0.8796731, 0.8928882, 0.8895844, 0.8948009, 0.90123457, 0.89653975, 0.89827853, 0.9017562, 0.897583, 0.9007129, 0.9031473, 0.90140843, 0.9026256, 0.9048861, 0.9010607, 0.8909755, 0.89775693, 0.8994957, 0.89966965, 0.90210396, 0.89740914, 0.90158236, 0.90453833, 0.89619195, 0.9040167, 0.90332115, 0.90332115, 0.89932185, 0.8998435, 0.9027995, 0.8788037, 0.89445317, 0.899148, 0.89810467, 0.90053904, 0.9094071, 0.90019125, 0.9022779, 0.89775693, 0.90506, 0.9019301, 0.9061033, 0.9040167, 0.90332115, 0.9090593, 0.9029734, 0.90749437, 0.9078421, 0.9057555, 0.91827506, 0.90836376, 0.9048861, 0.90558165, 0.9081899, 0.9061033, 0.9141019, 0.89932185, 0.9120153, 0.9041906, 0.91444963, 0.9008868, 0.9116675, 0.908016, 0.91062427, 0.9121892, 0.91444963, 0.9088854, 0.90158236, 0.9034951, 0.9078421, 0.9027995, 0.91358024, 0.9099287, 0.91427577, 0.9102765, 0.91584074, 0.91114587, 0.9102765, 0.9081899, 0.9120153, 0.9121892, 0.91705793, 0.91584074, 0.91427577, 0.9156668, 0.9128847, 0.9141019, 0.9130586, 0.9179273, 0.91705793, 0.91392803, 0.91984004, 0.9031473, 0.9210572, 0.9215789, 0.91757953, 0.9179273, 0.9187967, 0.91149366, 0.90732044, 0.9147974, 0.912537, 0.9118414, 0.91114587, 0.92175275, 0.9088854, 0.91427577, 0.91045034, 0.9132325, 0.9099287, 0.91984004, 0.9203617, 0.91984004, 0.92262214, 0.9274909, 0.91584074, 0.9200139, 0.91444963, 0.91984004, 0.9233177, 0.92175275, 0.9241871, 0.9271431, 0.9215789, 0.91862285, 0.9294036, 0.922796, 0.92488265, 0.9193184, 0.92070943, 0.9236546, 0.9215789, 0.92453486, 0.9314902, 0.92349154, 0.924361, 0.92662144, 0.92488265, 0.9151452, 0.91584074, 0.9224483, 0.9189706, 0.9221005, 0.9201878, 0.9274909, 0.92731696, 0.91549295, 0.9299252, 0.9187967, 0.9271431, 0.9203617, 0.9264476, 0.92575204, 0.9280125, 0.92731696, 0.9292297, 0.9280125, 0.9290558, 0.9292297, 0.9274909, 0.9294036, 0.9300991, 0.9271431, 0.92731696, 0.9309685, 0.922796, 0.92383933, 0.9255782, 0.92488265, 0.91949224, 0.93357676, 0.93044686, 0.9222744, 0.93983656, 0.92696923, 0.9287081, 0.92957747, 0.93253344, 0.93601114, 0.92609984, 0.9353156, 0.9306208, 0.93

079466, 0.93253344, 0.9337506, 0.9321857, 0.92731696, 0.9259259, 0.9273169  
6, 0.9294036, 0.9281864, 0.9330551, 0.93270737, 0.9300991, 0.9290558, 0.93  
11424, 0.92488265, 0.92888194, 0.9309685, 0.9353156, 0.92540425, 0.930968  
5, 0.92975134, 0.9342723, 0.9346201, 0.9353156, 0.93757606, 0.9334029, 0.9  
36185, 0.92853415, 0.93670666, 0.9262737, 0.93079466, 0.93288124, 0.926447  
6, 0.9250565, 0.91740566, 0.92662144, 0.9292297, 0.9247087, 0.9400104, 0.9  
3879324, 0.93166405, 0.9290558, 0.9334029, 0.936185, 0.9354895, 0.9297513  
4, 0.9353156, 0.9318379, 0.9393149, 0.93635887, 0.9349678, 0.9353156, 0.93  
670666, 0.93392456, 0.936185, 0.933229, 0.9365328, 0.93514174, 0.92975134,  
0.930273, 0.93270737, 0.93635887, 0.93879324, 0.9342723, 0.93444616, 0.934  
2723, 0.9386194, 0.93288124, 0.93983656, 0.9384455, 0.9384455]

## Conclusion

Final accuracy of >90% is pretty good, considering that training takes about 7 minutes.

Noticeable confusion between activities of Clapping Hands and Boxing, and between Jumping Jacks and Waving Two Hands which is understandable.

In terms of the applicability of this to a wider dataset, I would imagine that it would be able to work for any activities in which the training included a views from all angles to be tested on. It would be interesting to see it's applicability to camera angles in between the 4 used in this dataset, without training on them specifically.

Overall, this experiment validates the idea that 2D pose can be used for at least human activity recognition, and provides verification to continue onto use of 2D pose for behaviour estimation in both people and animals

## With regards to Using LSTM-RNNs

- Batch sampling
  - It is necessary to ensure you are not just sampling classes one at a time! (ie y\_train is ordered by class and batch chosen in order) The use of random sampling of batches without replacement from the training data resolves this.
- Architecture
  - Testing has been run using a variety of hidden units per LSTM cell, with results showing that testing accuracy achieves a higher score when using a number of hidden cells approximately equal to that of the input, ie 34. The following figure displays the final accuracy achieved on the testing dataset for a variety of hidden units, all using a batch size of 4096 and 300 epochs (a total of 1657 iterations, with testing performed every 8th iteration).

## Future Works

Inclusion of :

- A pipeline for qualitative results
- A validation dataset
- Momentum
- Normalise input data (each point with respect to distribution of itself only)
- Dropout
- Comparison of effect of changing batch size

Further research will be made into the use on more subtle activity classes, such as walking versus running, agitated movement versus calm movement, and perhaps normal versus abnormal behaviour, based on a baseline of normal motion.

## References

The dataset can be found at [http://tele-immersion.citris-uc.org/berkeley\\_mhad](http://tele-immersion.citris-uc.org/berkeley_mhad) ([http://tele-immersion.citris-uc.org/berkeley\\_mhad](http://tele-immersion.citris-uc.org/berkeley_mhad)) released under the BSD-2 license

Copyright (c) 2013, Regents of the University of California All rights reserved.

The network used in this experiment is based on the following, available under the [MIT License](https://github.com/guillaume-chevalier/LSTM-Human-Activity-Recognition/blob/master/LICENSE) (<https://github.com/guillaume-chevalier/LSTM-Human-Activity-Recognition/blob/master/LICENSE>). :

Guillaume Chevalier, LSTMs for Human Activity Recognition, 2016  
<https://github.com/guillaume-chevalier/LSTM-Human-Activity-Recognition>  
(<https://github.com/guillaume-chevalier/LSTM-Human-Activity-Recognition>)

In [ ]:

```
# Let's convert this notebook to a README for the GitHub project's title page:  
!jupyter nbconvert --to markdown LSTM.ipynb  
!mv LSTM.md README.md
```

In [ ]: