

# Configuration Manual

MSc Research Project  
Programme Name

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# Configuration Manual

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## 1 Introduction

The document gives the instructions on how to correctly execute the project. The project is implemented in Java programming language.

## 2 System Requirements

The system requirements are as follows:

1. Hardware Requirements:
  - System with minimum 4GB of RAM.
2. Operating System: Linux (Ubuntu 22.04.3 LTS).
3. Hadoop Version: Hadoop version 3.3.6.
4. Programming Language and Development Kit:
  - Java Development Kit (JDK) Java 8 or later.
5. Integrated Development Environment (IDE): Eclipse IDE for Java Developer.

## 3 Prerequisites

To implement the experimental environment, the system must have Hadoop installed and configured.

For our research, we have used single-node Hadoop installation to perform simple operations using the Hadoop Distributed File System (HDFS).<sup>1</sup>

## 4 Encryption and Decryption script

Figure Figure 1 and Figure Figure 2 shows the Encryption and Decryption script respectively

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<sup>1</sup><https://hadoop.apache.org/docs/stable/hadoop-project-dist/hadoop-common/SingleCluster.html>

```

18
19 public class StartEncryption {
20     static boolean flag=true;
21     static String filename="",dirname="",key="";
22     static int chk=0,ch=0;
23     static String userPass;
24     static String message;
25     static String exit;
26     static int trueSeed, count = 0;;
27     static boolean status = true;
28     static Random rand = new Random();
29     static Scanner sc = new Scanner(System.in);
30     static String temp_key="", add_key="";
31     static long key1, num;
32     static boolean flag1=true;
33
34     public PrivateKey getPrivate(String filename, String algorithm) throws Exception {
35         byte[] keyBytes = Files.readAllBytes(new File(filename).toPath());
36         PKCS8EncodedKeySpec spec = new PKCS8EncodedKeySpec(keyBytes);
37         KeyFactory kf = KeyFactory.getInstance(algorithm);
38         return kf.generatePrivate(spec);
39     }
40
41     public PublicKey getPublic(String filename, String algorithm) throws Exception {
42         byte[] keyBytes = Files.readAllBytes(new File(filename).toPath());
43         X509EncodedKeySpec spec = new X509EncodedKeySpec(keyBytes);
44         KeyFactory kf = KeyFactory.getInstance(algorithm);
45         return kf.generatePublic(spec);
46     }
47
48     public SecretKeySpec getSecretKey(String filename, String algorithm) throws IOException{
49         byte[] keyBytes = Files.readAllBytes(new File(filename).toPath());
50         return new SecretKeySpec(keyBytes, algorithm);

```

Figure 1: Encryption script

```

21
22     public PublicKey getPublic(String filename, String algorithm) throws Exception {
23         byte[] keyBytes = Files.readAllBytes(new File(filename).toPath());
24         X509EncodedKeySpec spec = new X509EncodedKeySpec(keyBytes);
25         KeyFactory kf = KeyFactory.getInstance(algorithm);
26         return kf.generatePublic(spec);
27     }
28
29     public SecretKeySpec getSecretKey(String filename, String algorithm) throws IOException{
30         byte[] keyBytes = Files.readAllBytes(new File(filename).toPath());
31         return new SecretKeySpec(keyBytes, algorithm);
32     }
33
34     public static void main(String[] args) throws IOException, GeneralSecurityException, Exception{
35         StartDecryption startEnc = new StartDecryption();
36
37         File encryptedKeyReceived = new File("EncryptedFiles/encryptedSecretKey");
38         File decryptedKeyFile = new File("DecryptedFiles/SecretKey");
39         new DecryptKey(startEnc.getPrivate("KeyPair/privateKey_Bob", "Blowfish"), encryptedKeyReceived, decryptedKeyFile, "Blowfish");
40
41         File encryptedFileReceived = new File("EncryptedFiles/encryptedFile");
42         File decryptedFile = new File("DecryptedFiles/decryptedFile");
43         //start time
44         long start = System.currentTimeMillis();
45
46         new DecryptData(encryptedFileReceived, decryptedFile, startEnc.getSecretKey("DecryptedFiles/SecretKey", "Blowfish"), "Blowfish");
47
48         // ending time
49         long end = System.currentTimeMillis();
50         System.out.println("Algo takes" + (end - start) + "milli seconds");
51
52     }

```

Figure 2: Decryption script

## 5 Code Execution Procedures

Once the experimental setup is ready, open the code with the IDE and initiate the connection with Hadoop by executing the Main-Prog.java file and follow the interface steps on the console as shown in Figure 3 and capture the output parameters.

Few HDFS Commands are mention in the link below.<sup>2</sup>

<sup>2</sup><https://hadoop.apache.org/docs/stable/hadoop-project-dist/hadoop-hdfs/HDFSCommands.html>

```
File stored in Hadoop... Encryption program starting.....
Enter Attributes for Private Key:
India
Bbau
Enter Password:
18#lu@445u
Encryption Program Starting
[18#lu@445u253,18#lu@445u221,18#lu@445u,I8#LU@445U,18#lu@445u23,I8#LU@445U265,]
Algo takes1483milli second
File successfully encrypted and stored in hadoop
1.....Encrypt a file
2.....Decrypt a file
3.....Quit
Enter your choice:
2
Enter Password:
18#lu@445u
Plese enter attributes:
India
Bbau
The file was successfully decrypted. You can view it in: DecryptedFiles/decrypte
dFile
Algo takes988milli seconds
1.....Encrypt a file
2.....Decrypt a file
3.....Quit
Enter your choice:
2
Enter Password:
ygy7889
Wrong Password
1.....Encrypt a file
2.....Decrypt a file
3.....Quit
Enter your choice:
```

Figure 3: Console to capture output parameters

## References