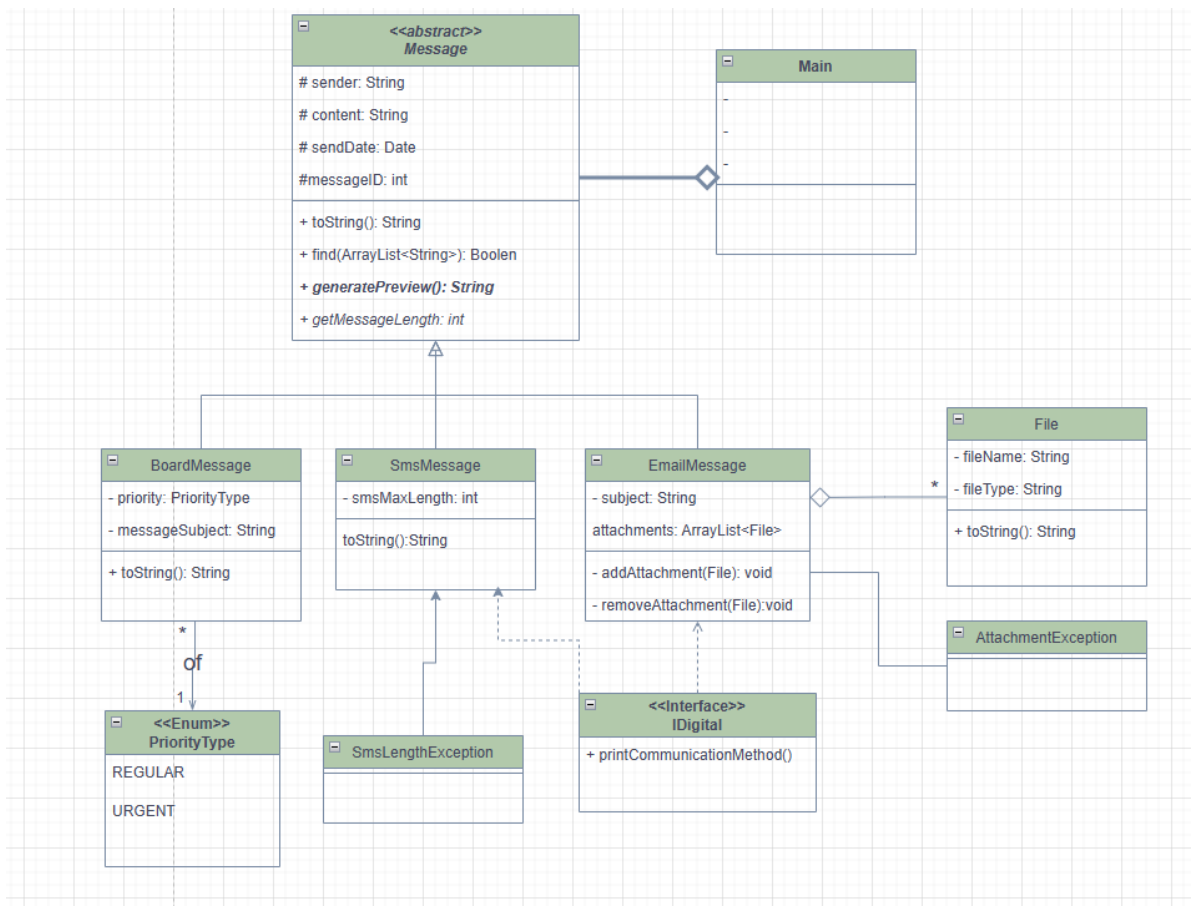# תרגיל בית 1
מעבר מ – C# ל – JAVA

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לינק לGitHub:

צילום דיאגרמת UML:

Message class

```java
import java.util.ArrayList;
import java.util.Date;
public  abstract class Message {

  private String sender;
  private String content;
  private Date sendDate;
  private int messageID;
  private static int messageIDCount=1;

  public Message(String sender, String content, Date sendDate) {

    setSender(sender);
    setContent(content);
    setSendDate(sendDate);
    messageID=messageIDCount++;
  }

  public Message(String sender, String content) {
    setSender(sender);
    setContent(content);
    sendDate = new Date();
    messageID=messageIDCount++;


  }

  //check if one of the word from the arraylist found in the message content
  public boolean find(ArrayList<String> list ) {
    for (String s : list) {
      if (content.contains(s)) {
        return true;
      }

    }
    return false;
  }

  public String toString()  {
```

```java
        return "Sender is: " + sender + ", Content is: " + content + ", Date send: " + sendDate + ", Message
ID: " + messageID;

    }

    //private method only accessible for this class(for the constructor)
    private void setSender(String sender) throws IllegalArgumentException
    {
        if (sender.trim().isEmpty()) {
            throw new IllegalArgumentException("Sender name cannot be null! we unable to create this
message!");

        }
        this.sender = sender;
    }

    public String getSender() {
        return sender;
    }

    //private method only accessible for this class(for the constructor)
    private void setContent(String content) throws IllegalArgumentException
    {
        if (content.trim().isEmpty()) {
            throw new IllegalArgumentException("Content cannot be null! we unable to create this
message!");
        }
        this.content = content;
    }

    public String getContent() {
        return content;
    }

    public void setSendDate(Date sendDate) {
        this.sendDate = sendDate;
    }

    public Date getSendDate() {

        return sendDate;
    }

    public int getMessageID() {
```

```java
        return messageID;
    }

    public int getMessageLength() {
        return content.length();
    }



    public abstract String generatePreview();


}
```

BoardMessage class

```java
import java.util.Date;



public class BoardMessage extends Message {


    private PriorityType priority;
    private String messageSubject;

    public BoardMessage(String sender, String content, Date sendDate, PriorityType priority, String messageSubject) {
        super(sender,content,sendDate);
        setPriority(priority);
        setMessageSubject(messageSubject);

    }

    public BoardMessage(String sender, String content,String messageSubject) {
        super(sender,content);
        priority=PriorityType.REGULAR;
        setMessageSubject(messageSubject);

    }
```

```java
    public void setPriority(PriorityType priority) {

        this.priority = priority;
    }


    public PriorityType getPriority() {
        return priority;
    }

    public void setMessageSubject(String messageSubject) {
        this.messageSubject = messageSubject;
    }

    public String getMessageSubject() {
        return messageSubject;
    }

    public String toString() {
        return super.toString() + ", Priority: " + priority + ", MessageSubject: " + messageSubject;
    }

    public String generatePreview() {
        String content15;
        //check if there is 15 letters in the content
        if(getContent().length()<=15) {
            content15 = getContent();
        }
        else {
            content15 = getContent().substring(0, 15);//getting the first 15 letters
        }

        return "[Board] "+ getSender() + ": " +content15 + "...";

    }

}
```

SmsMessage class

```java
import java.io.IOException;
import java.util.Date;

public class SmsMessage extends Message implements IDigital{

    private final int smsMaxLength = 200;

    public SmsMessage(String sender, String content)throws SmsLengthException {
        super(sender, content);

        if(content.length() > smsMaxLength){
            throw new SmsLengthException("Message content length exceeds sms max length!");
        }

    }

    public int getSmsMaxLength() {
        return smsMaxLength;
    }

    public String toString() {
        return super.toString();
    }

    public String printCommunicationMethod() {
        return "Sent via Mobile Carrier";
    }

    public String generatePreview() {
        String content15;
        //check if there is 15 letters in the content
        if(getContent().length()<=15) {
            content15 = getContent();
        }
        else {
            content15 = getContent().substring(0, 15);//getting the first 15 letters
        }

        return "[SMS] | From: " +getSender() + " Preview: " +content15
```

```
    }
}
```

EmailMessage class

```java
import java.util.ArrayList;

public class EmailMessage extends Message implements IDigital{


  private String subject;
  private ArrayList<File> attachments;


  public EmailMessage(String sender, String content, String subject, ArrayList<File> attachments) {
    super(sender, content);
    setSubject(subject);
    this.attachments = new ArrayList<File>(attachments);//crate a new arraylist with the same
                              // content of attachments
  }

  public EmailMessage(String sender, String content, String subject) {
    super(sender, content);
    attachments=new ArrayList<>();
    setSubject(subject);
  }


  public void setSubject(String subject)throws IllegalArgumentException {
    if (subject == null) {
      throw new IllegalArgumentException("subject cannot be null! we unable to create this
message!");
    }
    this.subject = subject;
  }

  public String getSubject() {
    return subject;
  }

  public ArrayList<File> getAttachments() {
    return attachments;
  }
```

```java
    public String toString() {
        return super.toString() + ", message subject: " + getSubject() + ", attachments:"
            + getAttachments().toString();
    }

    public String printCommunicationMethod() {
        return "Sent via Email Server";
    }

    public String generatePreview() {
        return "[Email] Subject: " +getSubject() + "| From: " +getSender();
    }

    public void addAttachment(File file) {
        getAttachments().add(file);
    }

    public void removeAttachment(File file)throws AttachmentException {
        if(!getAttachments().contains(file)) {
            throw new AttachmentException("File does not exist");
        }

        while(getAttachments().contains(file)) {
            getAttachments().remove(file);
        }
    }

}
```

Main class

```java
//TIP To <b>Run</b> code, press <shortcut actionId="Run"/> or
// click the <icon src="AllIcons.Actions.Execute"/> icon in the gutter.
void main() {

    ArrayList<Message> arrayList = new ArrayList<Message>();

    //create two messages manually
    EmailMessage emailMessage= new EmailMessage
        ("Milki","Hello world, its a beautiful day","Hello");
```

```java
BoardMessage boardMessage = new BoardMessage
    ("Yoni","The weekly meeting will take place tomorrow at 10 AM","Weekly meeting");

//add the new messages to the array list
arrayList.add(emailMessage);
arrayList.add(boardMessage);
Scanner input = new Scanner(System.in);

System.out.println("Welcome!\nWhat do you want to do today ?");
while (true){
    System.out.println("\n1. Add a new message\n2. Delete a message\n3. Print all available messages\n" +
        "4.Display the number of messages whose content contains words\n5.Print only the digital messages\n" +
        "6. Show total number of messages\n\n\n");


    String choice = input.nextLine();


    switch (choice) {
        case "1":
            addNewMessage(arrayList);
            break;

        case "2":
            deleteMessage(arrayList);
            break;

        case "3":
            printAllMessages(arrayList);
            break;

        case "4":
            onlyContentAvaliable(arrayList);

            break;
        case "5":
            onlyDigital(arrayList);

            break;
        case "6":
            summary(arrayList);
```

```java
            break;

            default: System.out.println("Invalid choice!");
        }

    }




    }
    //adding messages by user choice
    public static void addNewMessage( ArrayList<Message> arrayList) {
        System.out.println("Choose the message you want to send:\n" +
                "1.Board Message\n2.EmailMessage\n3.SMS Message");

        Scanner input = new Scanner(System.in);
        String choice = input.nextLine();

    switch(choice){
        case "1":
            System.out.println("Enter sender name: ");
            String sender = input.nextLine();
            //input.nextLine();

            System.out.println("Enter content: ");
            String content = input.nextLine();
            //input.nextLine();

            System.out.println("Enter date  dd/MM/yyyy: ");
            String date = input.nextLine();
            //input.nextLine();

            //convert the user input to Date object
            SimpleDateFormat sdf = new SimpleDateFormat("dd/MM/yyyy");
            Date sendDate=null;
            try{
                sendDate = sdf.parse(date);
            }
            catch(ParseException e){
                System.out.println("Invalid date format!- today's date was set");
                sendDate = new Date();
            }
```

```java
PriorityType chosenPriority=null;
try {
    System.out.println("Choose Priority:\n1-Regular\n2-Medium\n3-Urgent ");
    int priority = input.nextInt();

    //convert the user choice to ENUM
    if(priority == 1){
        chosenPriority = PriorityType.REGULAR;
    }
    else if(priority == 2){
        chosenPriority = PriorityType.MEDIUM;
    }
    else if(priority == 3){
        chosenPriority = PriorityType.URGENT;
    }
    else{
        System.out.println("Invalid number!\nDefault priority was set (REGULAR)");
        chosenPriority = PriorityType.REGULAR;
        input.nextLine();
    }

}
catch(InputMismatchException e){
    System.out.println("Invalid input only numbers allowed!\nDefault priority was set (REGULAR)");
    chosenPriority = PriorityType.REGULAR;
    input.nextLine();
}

System.out.println("Enter message subject: ");
String subject = input.nextLine();

try{
    BoardMessage boardMessage= new BoardMessage(sender,content,sendDate,chosenPriority,subject);
    arrayList.add(boardMessage);
    System.out.println(" Board Message added successfully!\n");

}
catch (IllegalArgumentException e){
    System.out.println(e.getMessage());
}

break;
```

```java
case "2":
   System.out.println("Enter sender name: ");
   String sender2 = input.nextLine();
   //input.nextLine();

   System.out.println("Enter content: ");
   String content2 = input.nextLine();
   //input.nextLine();

   System.out.println("Enter subject: ");
   String subject2 = input.nextLine();
   //input.nextLine();

   //option to add files to the email
   System.out.println("Do you want to add files to your email (y/n): ");
   String again;
   if(input.nextLine().equals("y")){
      again = "y";
      ArrayList<File> files = new ArrayList<File>();
      while (again.equals("y")) {


         System.out.println("Enter file name: ");
         String fileName = input.nextLine();
         //input.nextLine();

         System.out.println("Enter file type: ");
         String fileType = input.nextLine();
         //input.nextLine();

         files.add(new File(fileName, fileType));
         System.out.println("File added successfully!\n");

         System.out.println("Add another file? (y/n): ");
         again = input.nextLine();
      }

      try{
         EmailMessage emailMessage = new EmailMessage(sender2,content2,subject2,files);
         arrayList.add(emailMessage);
         System.out.println("Email Message (with files) added successfully!\n");
         return;
      }
      catch (IllegalArgumentException e){
```

```java
          System.out.println(e.getMessage());
        }


      }

      try{
        EmailMessage emailMessage = new EmailMessage(sender2,content2,subject2);
        arrayList.add(emailMessage);
        System.out.println("Email Message (without files) added successfully!\n");
      }
      catch (IllegalArgumentException e){
        System.out.println(e.getMessage());
      }

      break;
      case "3":
        System.out.println("Enter sender name: ");
        String sender3 = input.nextLine();
        //input.nextLine();

        System.out.println("Enter content: ");
        String content3 = input.nextLine();
        //input.nextLine();

        try{
          SmsMessage smsMessage = new SmsMessage(sender3,content3);
          arrayList.add(smsMessage);
          System.out.println("SMS Message added successfully!\n");
        }
        catch (SmsLengthException | IllegalArgumentException e){
          System.out.println(e.getMessage());
        }


        break;

    }


  }

  //delete messages by user choice
  public static void deleteMessage(ArrayList<Message> arrayList){
```

```java
        Scanner input = new Scanner(System.in);

        if(arrayList.isEmpty()){
            System.out.println("There are no messages to delete!\n");
            return;
        }

        //shows all the messages preview
        for(int i=0 ;i<arrayList.size(); i++){
            System.out.println("Message number " + (i+1) + " " + arrayList.get(i).generatePreview());

        }

        System.out.println("\n");
        System.out.println("Chose the  number message you want to delete:\n");

        int choice = input.nextInt();
        input.nextLine();

        arrayList.remove(arrayList.get(choice-1));


    }

    //printing all the messages data
    public static void printAllMessages(ArrayList<Message> arrayList){
        System.out.println("\nAll messages will now be displayed!\n");

        for(Message message: arrayList){
            System.out.println(message);
        }
    }

    //Print only messages with available content
    public static void onlyContentAvaliable(ArrayList<Message> arrayList){
        int count=0;
        for(Message message: arrayList){
            if (!message.getContent().trim().isEmpty()){
                count++;
            }
        }

        System.out.println("The number of messages that contains words are " + count);
    }
```

```java
//printing only the digital messages
public static void onlyDigital(ArrayList<Message> arrayList){
    for(Message message: arrayList){
        if (message instanceof IDigital) {
            System.out.println(message);
        }
    }
}

//display the available messages by type
public static void summary(ArrayList<Message> arrayList){
    int bMessage=0;
    int eMessage=0;
    int sMessage=0;

    for(Message message: arrayList){
        if(message instanceof BoardMessage){
            bMessage++;
        }
        if(message instanceof EmailMessage){
            eMessage++;
        }
        if(message instanceof SmsMessage){
            sMessage++;
        }
    }
    System.out.println("Message Summary:\nNumber of board messages: " + bMessage);
    System.out.println("Number of email messages: " + eMessage);
    System.out.println("Number of sms messages: " + sMessage);
}
```

File class

```java
public class File {

    String fileName;
    String fileType;


    public File(String fileName, String fileType) {
        this.fileName = fileName;
        this.fileType = fileType;
    }

    public void setFileName(String fileName)throws IllegalArgumentException {

        if (fileName == null) {
            throw new IllegalArgumentException("file name cannot be null");

        }
        this.fileName = fileName;

    }

    public String getFileName() {
        return fileName;
    }

    public void setFileType(String fileType)throws IllegalArgumentException {
        if (fileType == null) {
            throw new IllegalArgumentException("file type cannot be null");
        }
        this.fileType = fileType;
    }

    public String getFileType() {
        return fileType;
    }

    public String toString() {
        return " file name: "+ getFileName() + "file type: "+ getFileType();
    }

}
```

```
Welcome!
What do you want to do today ?

1. Add a new message
2. Delete a message
3. Print all available messages
4.Display the number of messages whose content contains words
5.Print only the digital messages
6. Show total number of messages



1
Choose the message you want to send:
1.Board Message
2.EmailMessage
3.SMS Message
```

Send email message

```
Choose the message you want to send:
1.Board Message
2.EmailMessage
3.SMS Message
2
Enter sender name:
jon sina
Enter content:
hello world
Enter subject:
hello
Do you want to add files to your email (y/n):
y
Enter file name:
file1
Enter file type:
zip
File added successfully!

Add another file? (y/n):
n
Email Message (with files) added successfully!
```

Send board message

```
Choose the message you want to send:
1.Board Message
2.EmailMessage
3.SMS Message
1
Enter sender name:
messi
Enter content:
I love football
Enter date  dd/MM/yyyy:
12/12/2025
Choose Priority:
1-Regular
2-Medium
3-Urgent
2
Enter message subject:
football
 Board Message added successfully!
```

Send sms message

```
Choose the message you want to send:
1.Board Message
2.EmailMessage
3.SMS Message
3
Enter sender name:
avi ron
Enter content:
I love helicopters
SMS Message added successfully!
```

Delete message

```
1. Add a new message
2. Delete a message
3. Print all available messages
4.Display the number of messages whose content contains words
5.Print only the digital messages
6. Show total number of messages


2
Message number 1 [Email] Subject: Hello| From: Milki
Message number 2 [Board] Yoni: The weekly meet...
Message number 3 [Board] messi: I love football...
Message number 4 [SMS] | From: avi ron Preview: I love helicopt


Chose the  number message you want to delete:


1
```

Display messages

```
1. Add a new message
2. Delete a message
3. Print all available messages
4.Display the number of messages whose content contains words
5.Print only the digital messages
6. Show total number of messages



3

All messages will now be displayed!

Sender is: Yoni, Content is: The weekly meeting will take place tomorrow at 10 AM, Date send: Fri Nov 21 13:13:15 IST 2025, Message ID: 2, Pric
Sender is: messi, Content is: I love football, Date send: Fri Dec 12 00:00:00 IST 2025, Message ID: 3, Priority: MEDIUM, MessageSubject: footba
Sender is: avi ron, Content is: I love helicopters, Date send: Fri Nov 21 13:15:31 IST 2025, Message ID: 4

1. Add a new message
```

Display messages that contain words

```
1. Add a new message
2. Delete a message
3. Print all available messages
4.Display the number of messages whose content contains words
5.Print only the digital messages
6. Show total number of messages



4
The number of messages that contains words are 3
```

Print only digital messages

```
1. Add a new message
2. Delete a message
3. Print all available messages
4.Display the number of messages whose content contains words
5.Print only the digital messages
6. Show total number of messages



5
Sender is: avi ron, Content is: I love helicopters, Date send: Fri Nov 21 13:15:31 IST 2025, Message ID: 4
```

Display total number of messages

```
1. Add a new message
2. Delete a message
3. Print all available messages
4.Display the number of messages whose content contains words
5.Print only the digital messages
6. Show total number of messages



6
Message Summary:
Number of board messages: 2
Number of email messages: 0
Number of sms messages: 1
```

some errors handling

```
Choose the message you want to send:
1.Board Message
2.EmailMessage
3.SMS Message
1
Enter sender name:
yossi
Enter content:
abcd
Enter date  dd/MM/yyyy:
asd
Invalid date format!- today's date was set
Choose Priority:
1-Regular
2-Medium
3-Urgent
d
Invalid input only numbers allowed!
Default priority was set (REGULAR)
Enter message subject:
message
  Board Message added successfully!
```

```
1. Add a new message
2. Delete a message
3. Print all available messages
4.Display the number of messages whose content contains words
5.Print only the digital messages
6. Show total number of messages


2
Message number 1 [Email] Subject: Hello| From: Milki
Message number 2 [Board] Yoni: The weekly meet...


Chose the  number message you want to delete:

3
Invalid choice!
```

```
Choose the message you want to send:
1.Board Message
2.EmailMessage
3.SMS Message
2
Enter sender name:

Enter content:
bla
Enter subject:
bli
Do you want to add files to your email (y/n):
n
Sender name cannot be null! we unable to create this message!
```

```
Choose the message you want to send:
1.Board Message
2.EmailMessage
3.SMS Message
2
Enter sender name:
blo
Enter content:
bla
Enter subject:

Do you want to add files to your email (y/n):
n
subject cannot be null! we unable to create this message!
```