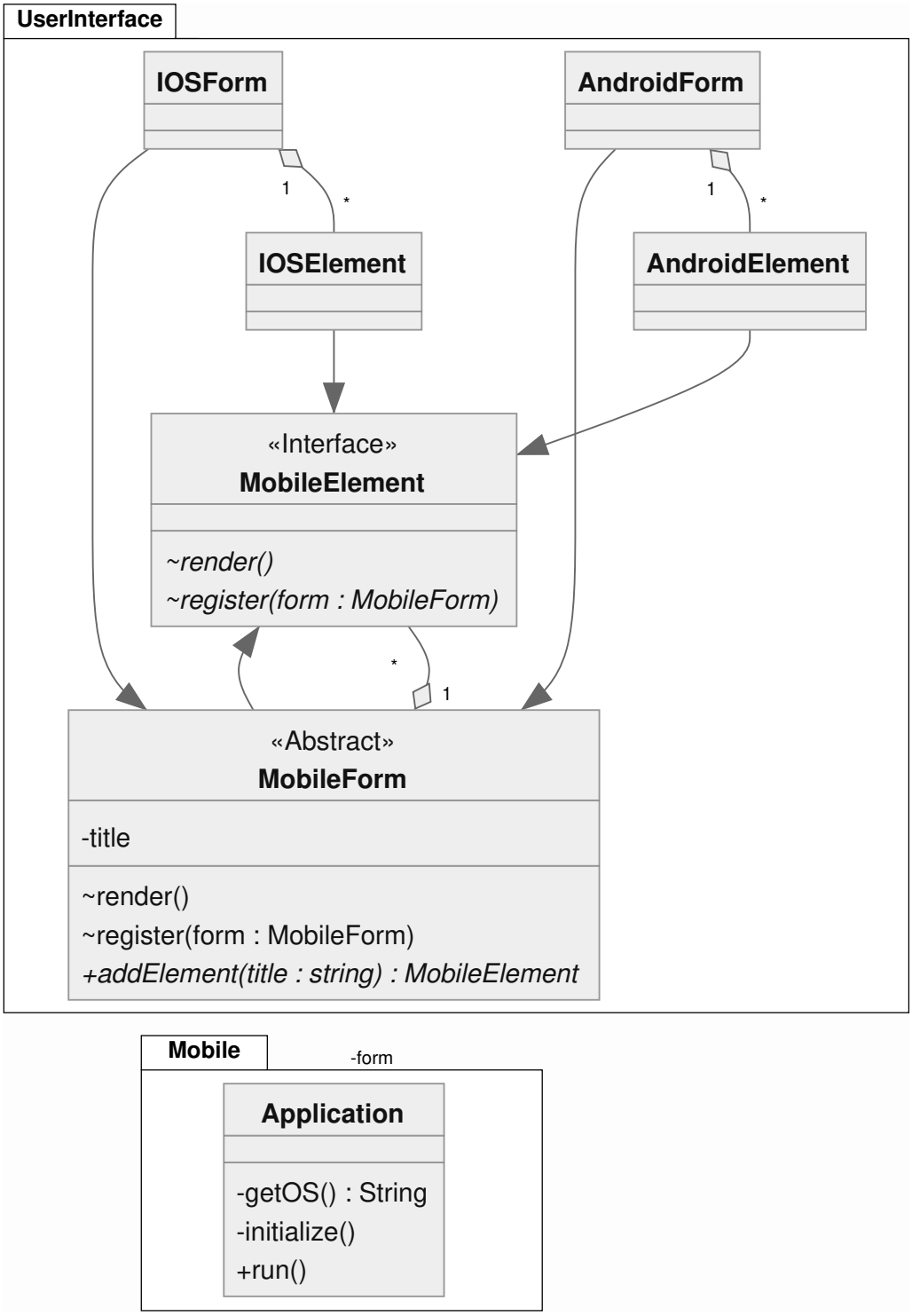
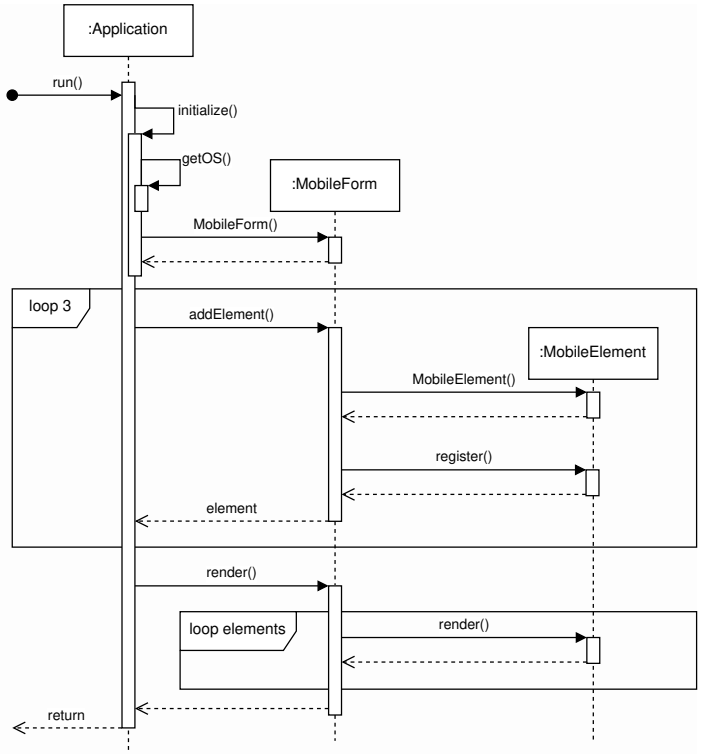
SWT HA07

A1

a)


UserInterface
IOSForm
AndroidForm
1
*
1
*
IOSElement
AndroidElement
«Interface»
MobileElement
~render()
~register(form : MobileForm)
*
1
«Abstract»
MobileForm
-title
~render()
~register(form : MobileForm)
+addElement(title : string) : MobileElement
Mobile
-form
Application
-getOS() : String
-initialize()
+run()

b)

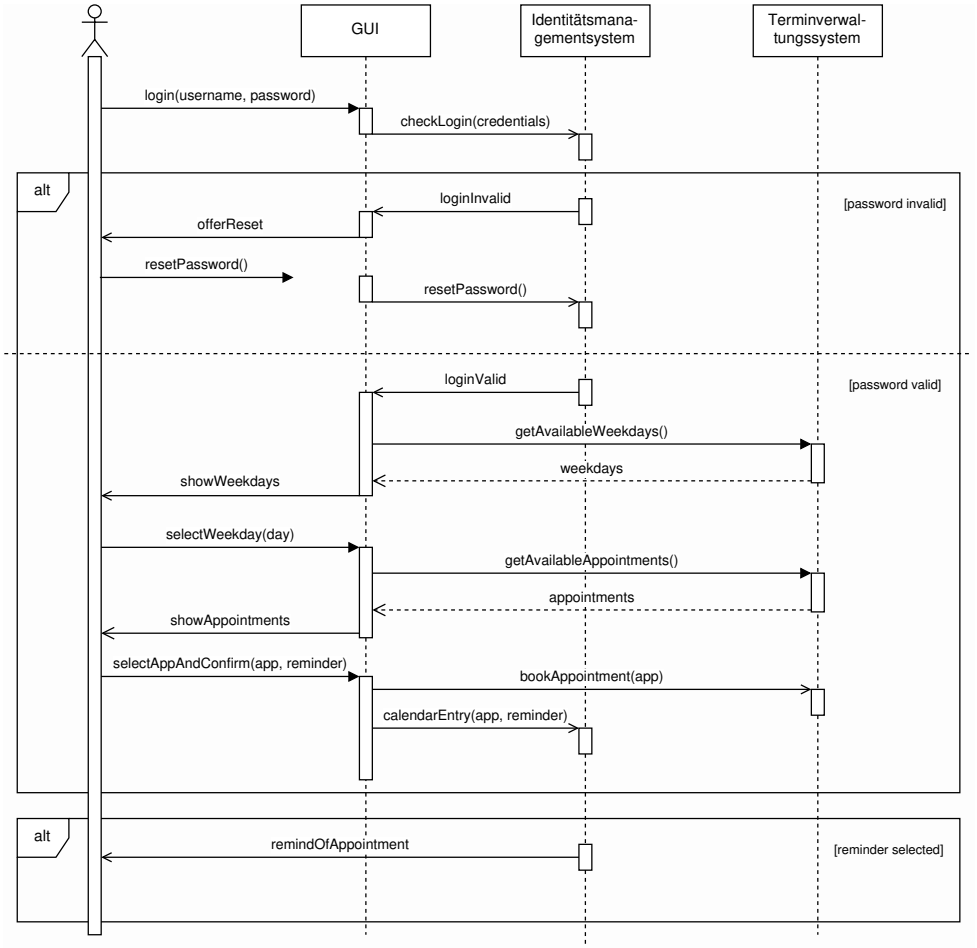


c)

```python
from typing import List

from abc import ABC, abstractmethod, abstractproperty


class MobileElement(ABC):
    @abstractmethod
    def render(self) -> None:
        ...

    @abstractmethod
    def register(self, form: "MobileForm") -> None:
        ...


class MobileForm(MobileElement):
    title: str

    @abstractproperty
    def elements(self) -> List[MobileElement]:
        ...

    def render(self) -> None:
        for element in self.elements:
            element.render()

    @abstractmethod
    def addElement(self, title: str) -> MobileElement:
        ...


class AndroidElement(MobileElement):
    def render(self) -> None:
        ...

    def register(self, form: "MobileForm") -> None:
        ...
```

```
class IOSElement(MobileElement):
    def render(self) -> None:
        ...

    def register(self, form: "MobileForm") -> None:
        ...


class AndroidForm(AndroidElement, MobileForm):
    elements: List[AndroidElement] = None  # Set in __init__

    def addElement(self, title: str) -> AndroidElement:
        self.elements.append(AndroidElement())

        self.elements[-1].register(self)

        return self.elements[-1]


class IOSForm(IOSElement, MobileForm):
    elements: List[IOSElement] = None  # Set in __init__

    def addElement(self, title: str) -> IOSElement:
        self.elements.append(IOSElement())

        self.elements[-1].register(self)

        return self.elements[-1]


class Application:
    form: MobileForm

    def initialize(self) -> None:
        match self.getOS():
            case "Android":
                self.form = AndroidForm()
            case "iOS":
                self.form = IOSForm()

    def run(self) -> None:
        self.initialize()

        for i in range(3):
            self.form.addElement(f"title {i}")

    def getOS(self) -> str:
        ...
```

A2


GUI
Identitätsmana-
gementsystem
Terminverwal-
tungssystem
login(username, password)
checkLogin(credentials)
alt
loginInvalid
[password invalid]
offerReset
resetPassword()
resetPassword()
loginValid
[password valid]
getAvailableWeekdays()
weekdays
showWeekdays
selectWeekday(day)
getAvailableAppointments()
appointments
showAppointments
selectAppAndConfirm(app, reminder)
bookAppointment(app)
calendarEntry(app, reminder)
alt
remindOfAppointment
[reminder selected]