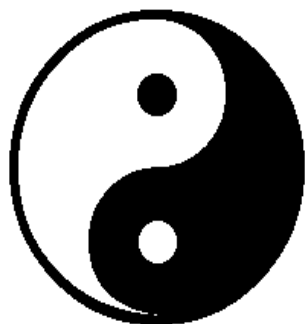




HEADHUNTER

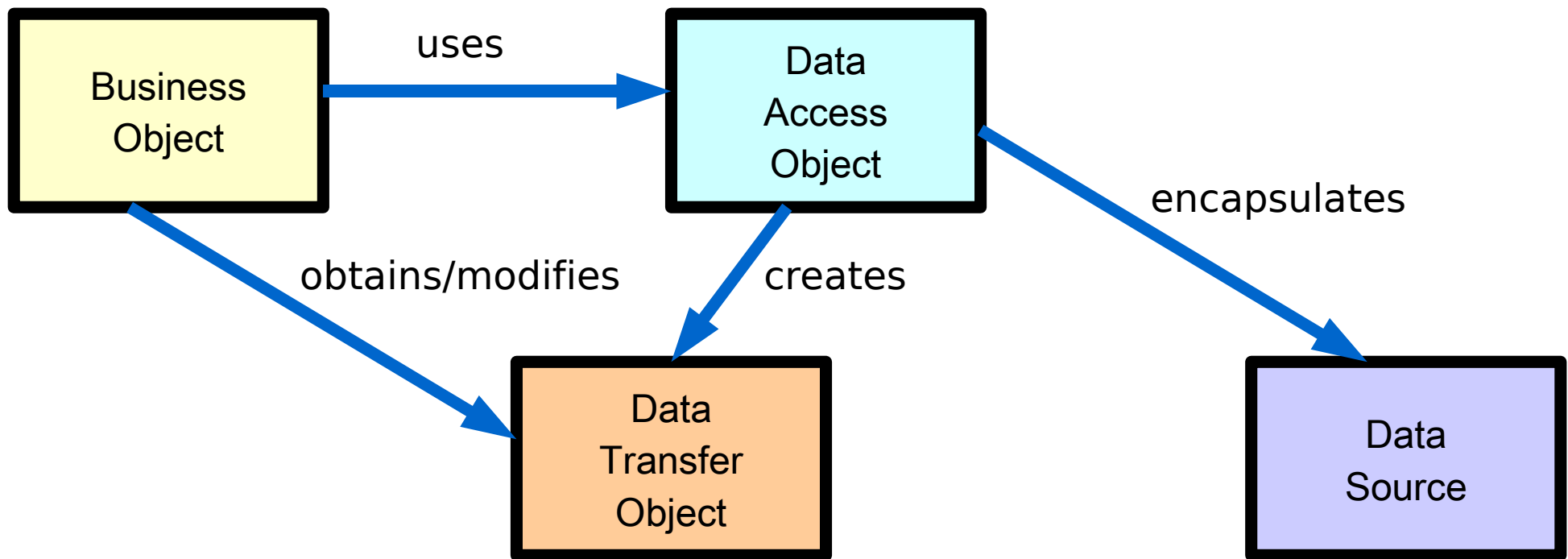
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DAO (Data Access Object) and ORM (Object-Relational Mapping)

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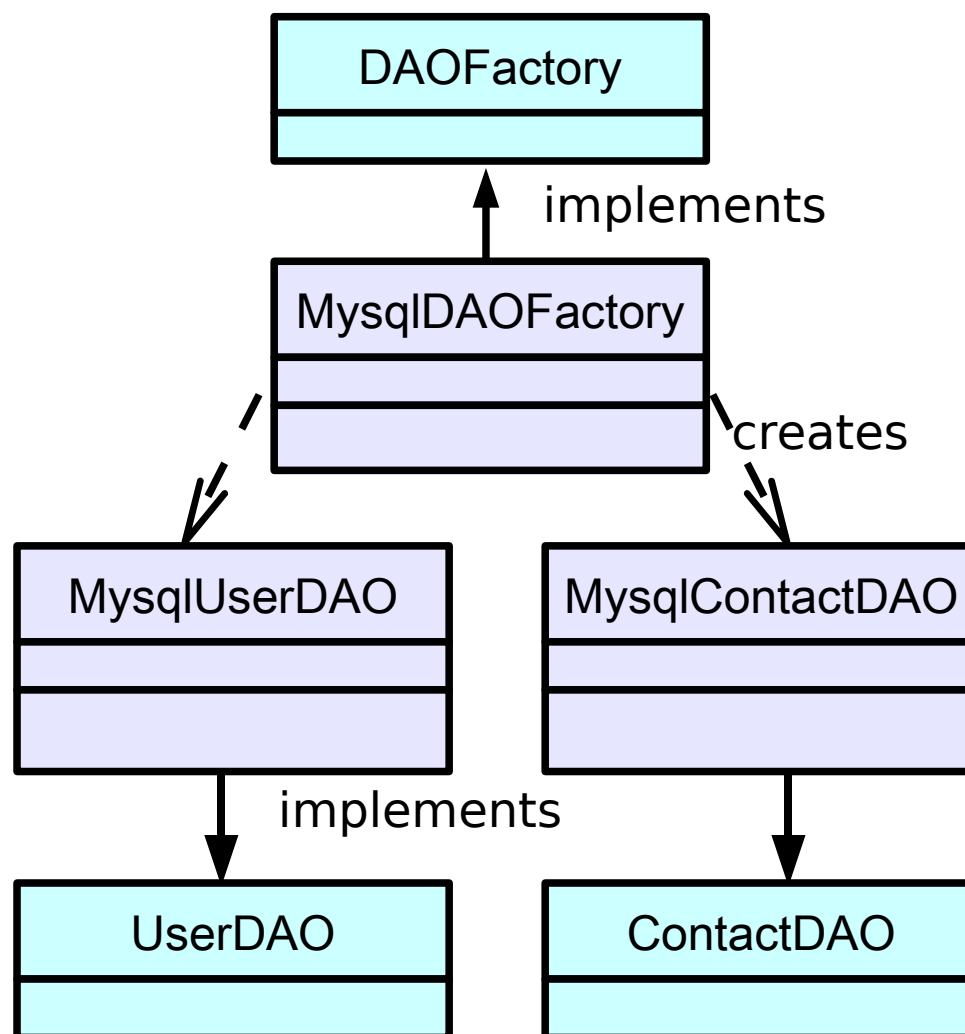
2. Взаимосвязи объектов



BusinessObject: SessionBean, EntityBean, сервлет, ...

DataSource: RDBMS, OODBMS, XML, file, service, ...

3. Использование фабрики для создания DAO



4. Типичный набор методов DAO

UserDAO

```
create (UserDTO) :void  
read (int) :void  
readAll () :List  
update (UserDTO) :void  
delete (int) :void
```

ContactDAO

```
create (ContactDTO) :void  
read (int) :void  
readById (int) :void  
update (ContactDTO) :void  
delete (int) :void
```

5. Data Transfer Objects (DTO)

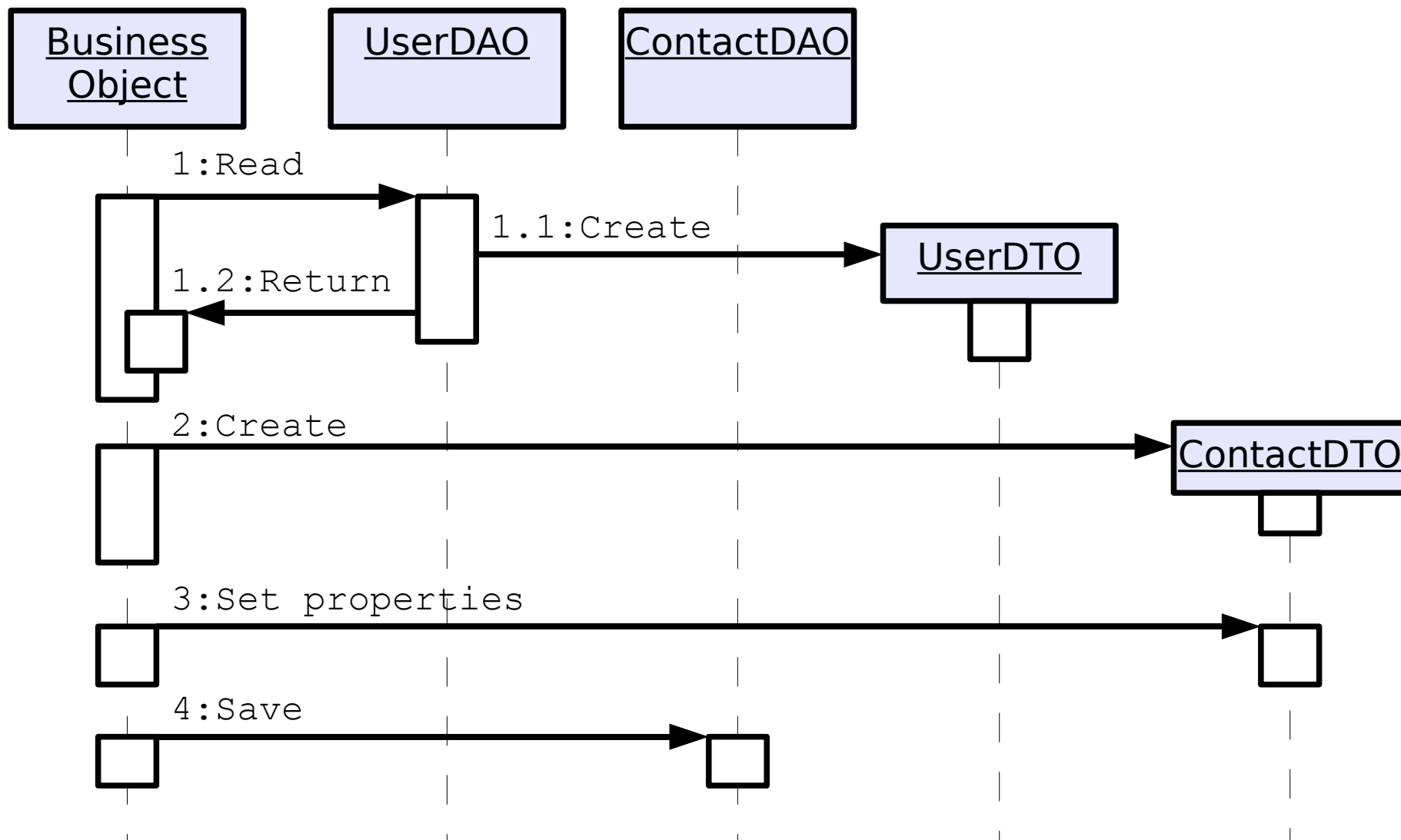
UserDTO

```
id: int
name: string
address: string
contacts: Set
```

ContactDTO

```
id: int
userId: int
user: UserDTO
contactUserId: int
contactUser: UserDTO
note: string
```

6. Использование DAO: добавление контакта



7. Контекст приложения, использующего DAO

```
<beans>

  <bean id="object" class="BusinessObject">
    <property name="userDAO" ref="userDAO" />
    <property name="contactDAO" ref="contactDAO" />
  </bean>

  <bean id="userDAO" class="UserDAO">
    <property name="sessionFactory" ref="sessionFactory" />
  </bean>

  <bean id="contactDAO" class="ContactDAO">
    <property name="sessionFactory" ref="sessionFactory" />
  </bean>

  ...

</beans>
```


8. Источники данных, поддерживаемые ORM



Oracle, DB2, Microsoft SQL Server, Sybase, MySQL, PostgreSQL, TimesTen, HypersonicSQL, SAP DB, InterSystems Cache', Apache Derby, HP NonStop SQL/MX, Firebird, FrontBase, Informix, Ingres, Interbase, Mckoi SQL, Pointbase, Progress, Microsoft Access, Corel Paradox, flat text , CSV file, TSV file, fixed-length and variable-length binary file, Xbase database, Microsoft Excel



Apache Derby, Borland Interbase, Borland JdataStore, DB2, Empress, Firebird, H2, Hypersonic, Informix, InterSystems Cache', Microsoft Access, Microsoft SQL Server, Microsoft Visual FoxPro, MySQL, Oracle, Pointbase, PostgreSQL, Sybase



MySQL, MS SQL Server, ORACLE, Sybase, HSQL, H2, PostgreSQL, Pointbase, Apache Derby, DB2, Firebird, SAPDB/MaxDB, Informix

```
@Entity
class User {

    @Id
    Integer id;

    @Basic
    String name;

    @Basic
    String address;

    @OneToMany
    Set<Contact> contacts;

    void add(Contact) ;

    void remove(Contact) ;
}
```

```
@Entity
class Contact {

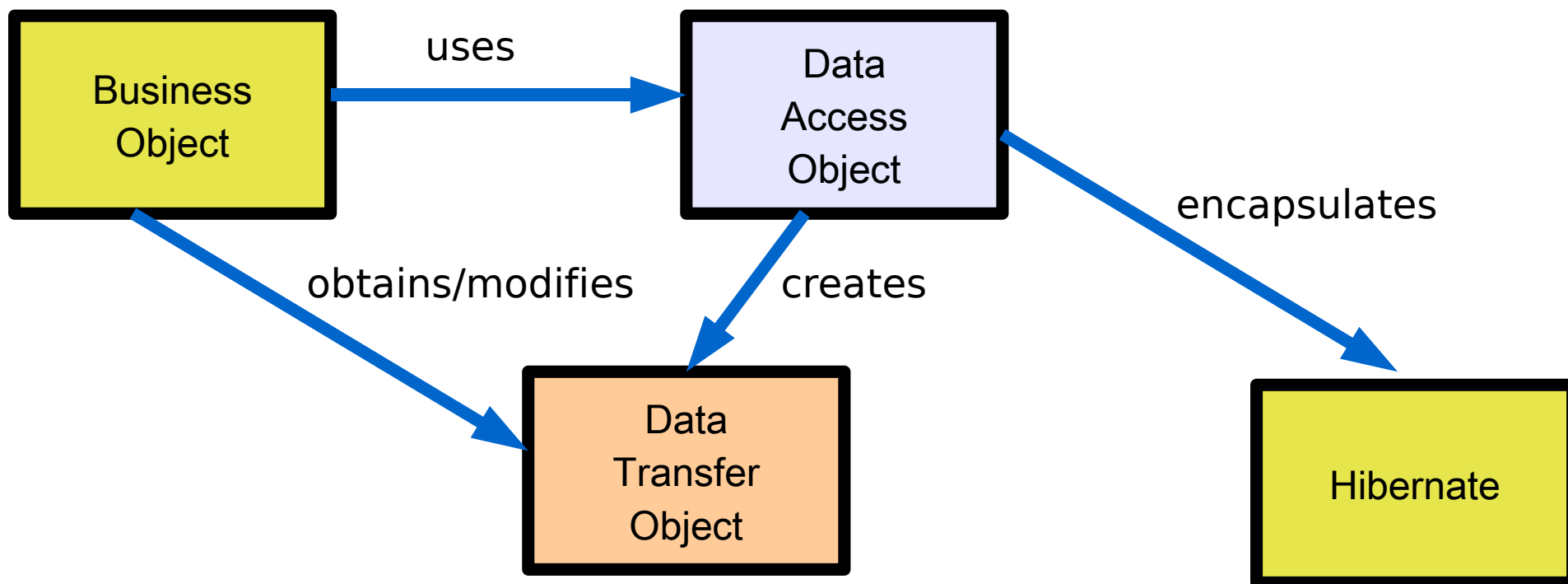
    @Id
    Integer id;

    @Basic
    String note;

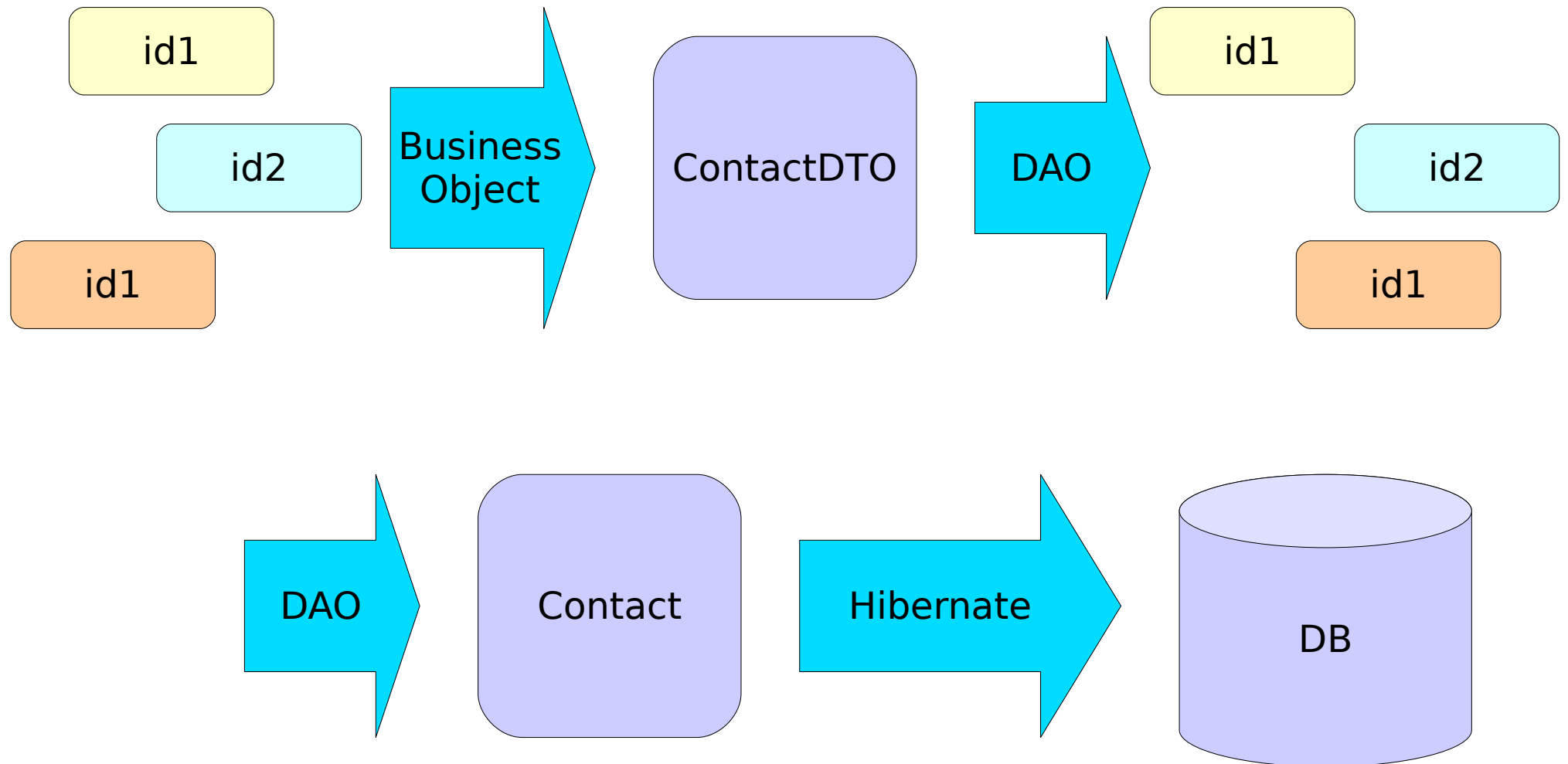
    @ManyToOne
    User user;

    @ManyToOne
    User contactUser;
}
```

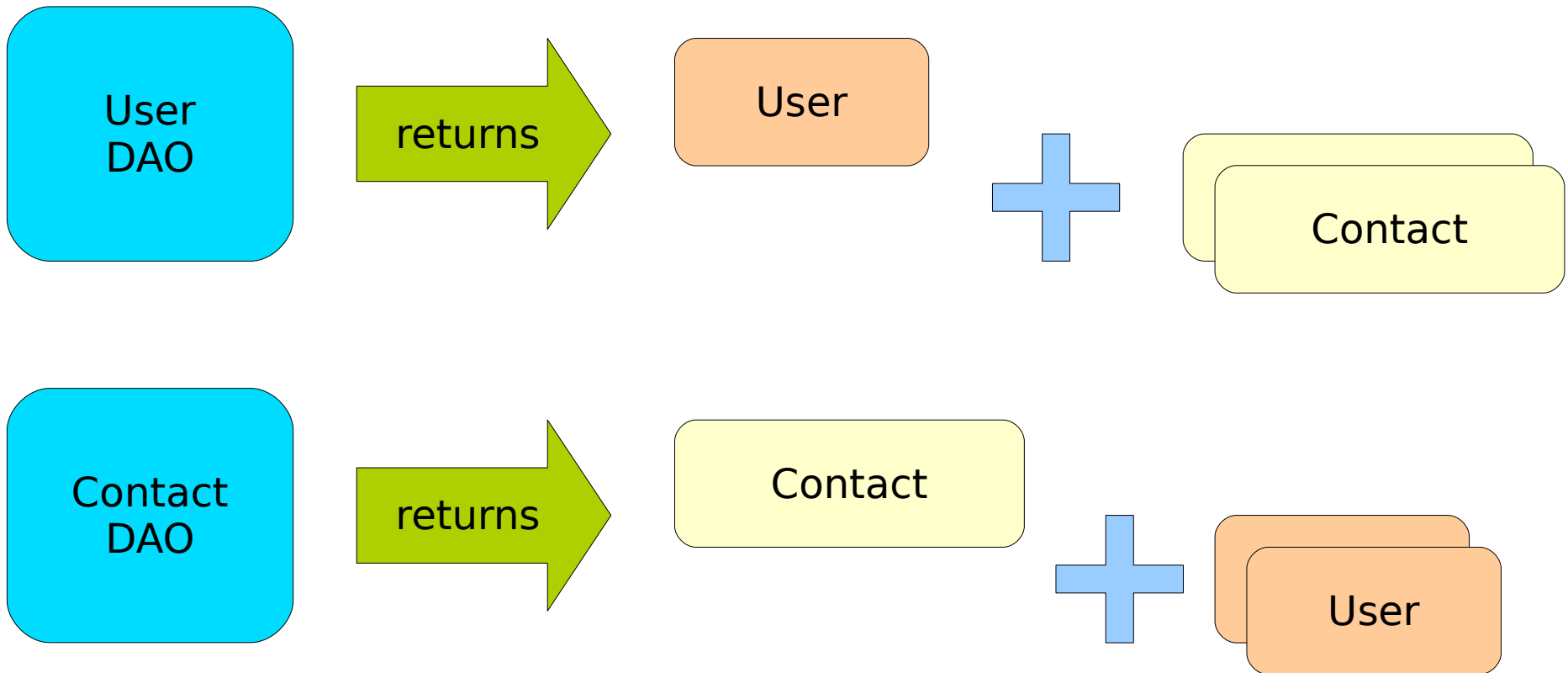
10. Использование ORM в рамках шаблона DAO



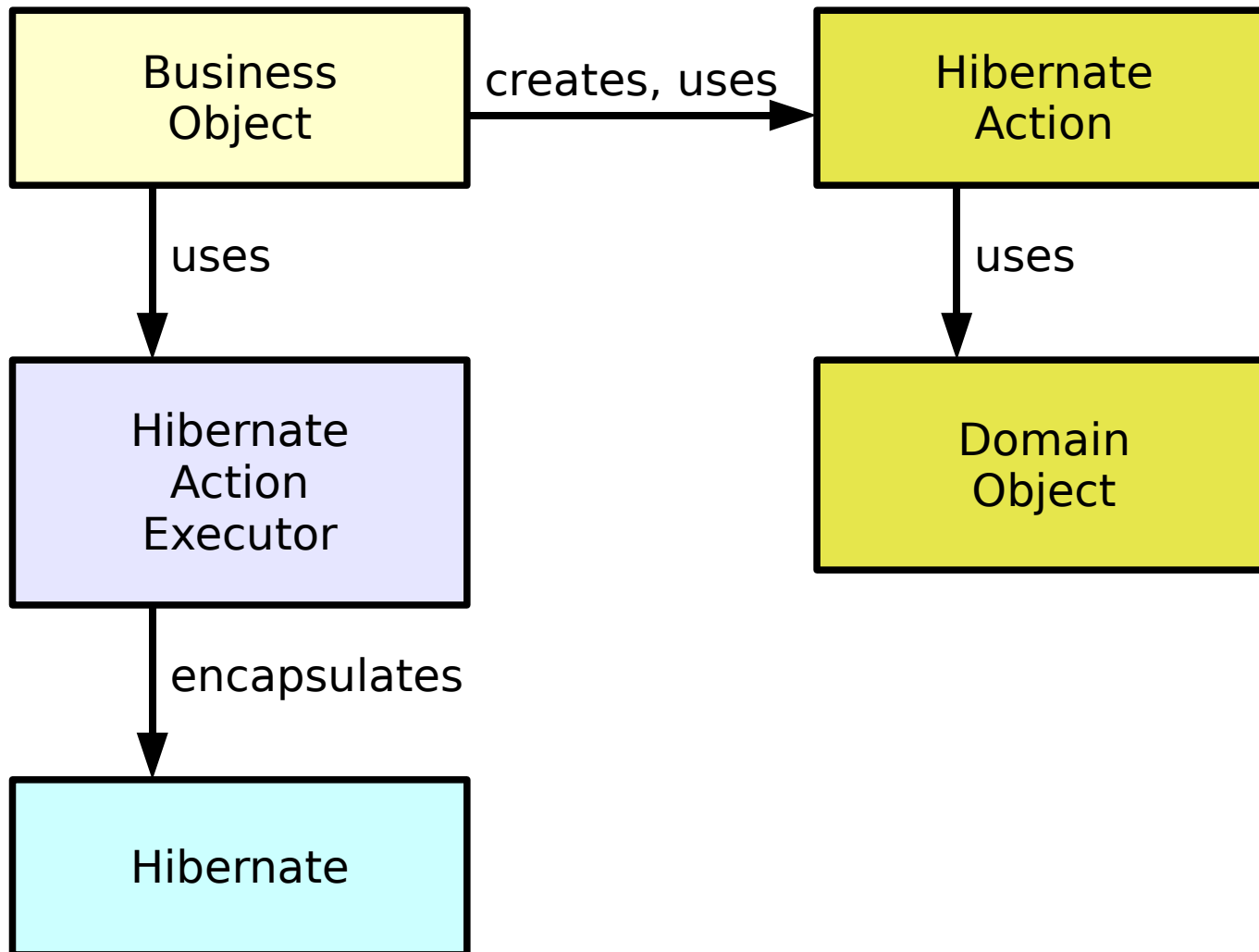
11. DTO != domain object



12. DTO == domain object



13. Использование шаблона Action

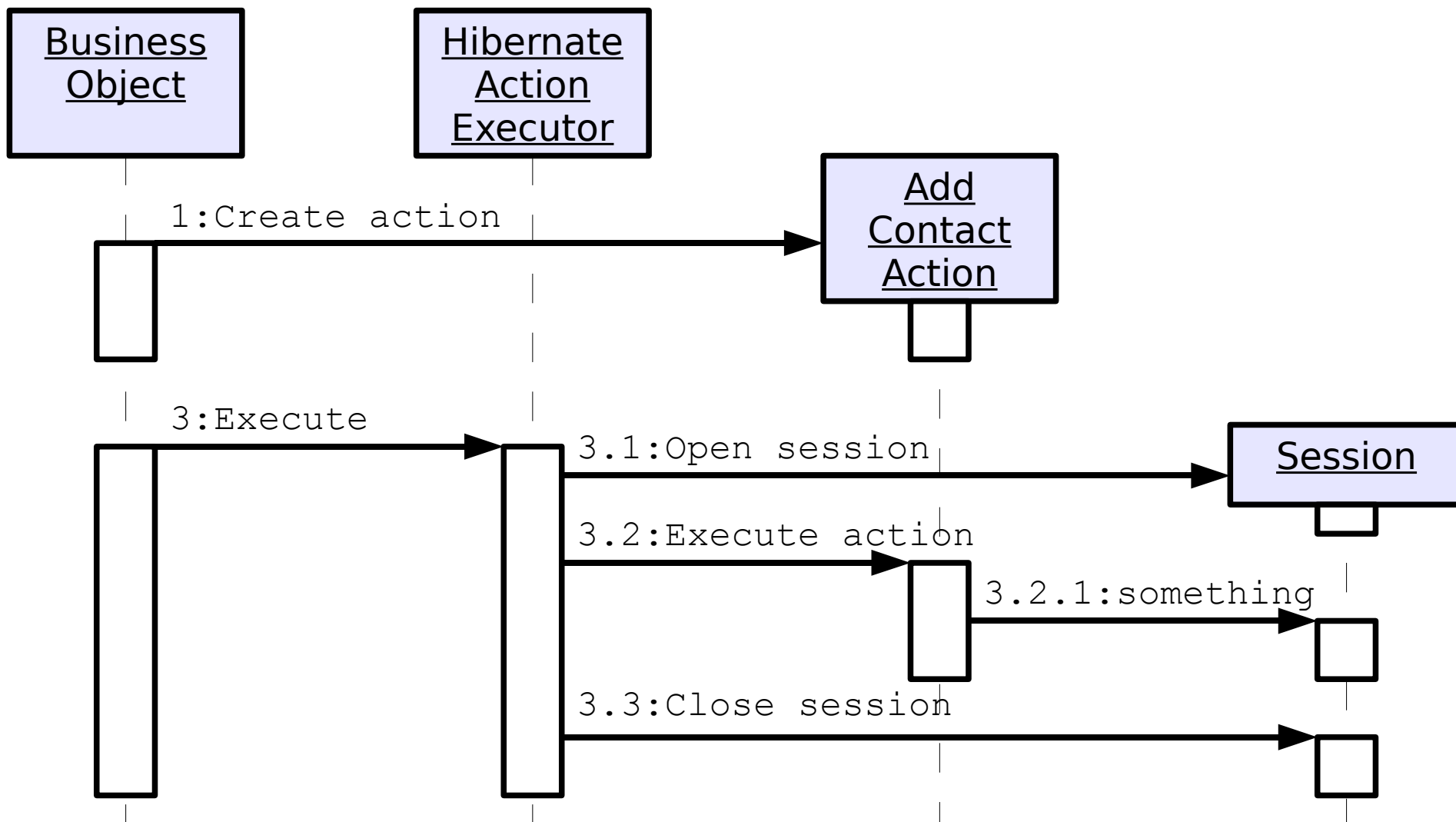


```
interface HibernateActionExecutor {  
    Object execute(HibernateAction);  
}
```

```
interface HibernateAction {  
    Object execute(Session);  
}
```

```
public class AddContactAction implements HibernateAction {  
  
    private int userId;  
    private int contactUserId;  
    private String note;  
  
    public Object execute(Session session) {  
        User user = new GetUserAction(userId).execute(session);  
        User contactUser = new GetUserAction(contactUserId)  
            .execute(session);  
        user.add(contactUser);  
    }  
}
```


16. Использование ORM без DAO



17. Контекст приложения, использующего DAO

```
<beans>

  <bean class="BusinessObject">
    <property name="executor" ref="executor"/>
  </bean>

  <bean id="executor" class="HibernateActionExecutor">
    <property name="sessionFactory" ref="sessionFactory"/>
  </bean>

  ...

</beans>
```

18. Основные преимущества

Преимущества использования шаблона Action:

- тестируемость
- прозрачность
- повторное использование кода
- хорошая изоляция сложных аспектов отдельных операций