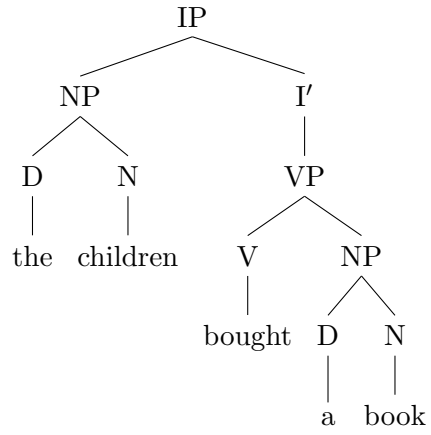## Solution 1
— LFG Basics —

1   C-structure vs. F-structure

1. LFG has to core syntactic levels of analysis: the c-structure and the f-structure. What do each of these represent/encode? (6 points)

   - **C-Structure**: Linear precedence, constituency, hierarchical dominance relations.

     F-structure: abstract functional relations, predicate-argument structure (grammatical relations/functions), modification.

2. Analyze the sentences in (1). Draw c-structure trees and f-structure representations for each of the sentences.

   (1) a. The children bought a book. (16 points)

   b. Kim played. (16 points)
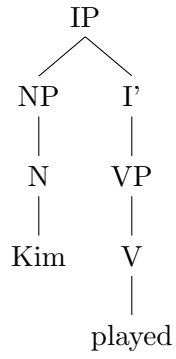
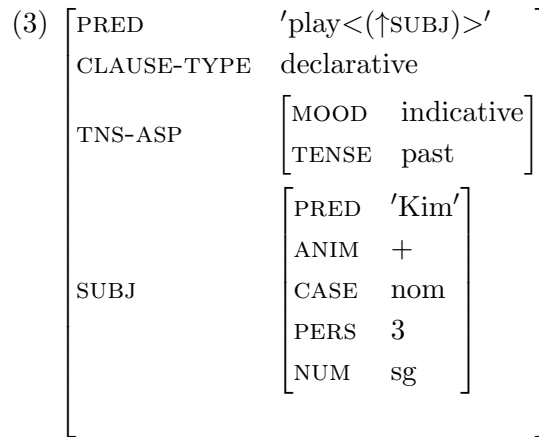   c. The children will buy a book. (16 points)

C-structure (1)

```
                      IP
              ┌───────┴───────┐
             NP               I′
          ┌───┴───┐           │
          D       N           VP
          │       │       ┌───┴───┐
         the   children   V       NP
                          │     ┌──┴──┐
                        bought  D     N
                                │     │
                                a    book
```

F-structure (1)

$$
(2) \quad
\begin{bmatrix}
\text{PRED} & \text{′buy}<(\uparrow\text{SUBJ})\ (\uparrow\text{OBJ})>\text{′} \\
\text{CLAUSE-TYPE} & \text{declarative} \\
\text{TNS-ASP} & \begin{bmatrix} \text{MOOD} & \text{indicative} \\ \text{TENSE} & \text{past} \end{bmatrix} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{′child′} \\ \text{ANIM} & + \\ \text{CASE} & \text{nom} \\ \text{PERS} & 3 \\ \text{NUM} & \text{pl} \\ \text{DEF} & + \end{bmatrix} \\
\text{OBJ} & \begin{bmatrix} \text{PRED} & \text{′book′} \\ \text{GEND} & \text{masc} \\ \text{CASE} & \text{acc} \\ \text{PERS} & 3 \\ \text{NUM} & \text{sg} \\ \text{DEF} & - \end{bmatrix}
\end{bmatrix}
$$

C-structure (2)

```
              IP
            /    \
         NP        I'
          |         |
          N        VP
          |         |
         Kim        V
                    |
                 played
```

F-structure (2)

$$(3)\quad\begin{bmatrix} \text{PRED} & '\text{play}{<}(\uparrow\text{SUBJ}){>}' \\ \text{CLAUSE-TYPE} & \text{declarative} \\ \text{TNS-ASP} & \begin{bmatrix} \text{MOOD} & \text{indicative} \\ \text{TENSE} & \text{past} \end{bmatrix} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & '\text{Kim}' \\ \text{ANIM} & + \\ \text{CASE} & \text{nom} \\ \text{PERS} & 3 \\ \text{NUM} & \text{sg} \end{bmatrix} \end{bmatrix}$$

C-structure (3)

```
                    IP
               /          \
            NP              I'
           /  \           /    \
          D    N         I      VP
          |    |         |     /   \
        the children    will  V     NP
                              |     /  \
                             buy   D    N
                                   |    |
                                   a   book
```

3

F-structure (3)

$$(4) \begin{bmatrix} \text{PRED} & \text{'buy<}(\uparrow\text{SUBJ}) \ (\uparrow\text{OBJ})\text{>'} \\ \text{CLAUSE-TYPE} & \text{declarative} \\ \text{TNS-ASP} & \begin{bmatrix} \text{MOOD} & \text{indicative} \\ \text{TENSE} & \text{fut} \end{bmatrix} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'child'} \\ \text{ANIM} & + \\ \text{CASE} & \text{nom} \\ \text{PERS} & 3 \\ \text{NUM} & \text{pl} \\ \text{DEF} & + \end{bmatrix} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'monkey'} \\ \text{GEND} & \text{masc} \\ \text{CASE} & \text{acc} \\ \text{PERS} & 3 \\ \text{NUM} & \text{sg} \\ \text{DEF} & \text{-} \end{bmatrix} \end{bmatrix}$$

2 Grammatische Relationen

Determine what the GFs of the arguments are. For each of the sentences in (5)–(7). If you know German, you can choose to tackle the German sentences instead of the English ones. (6 points per sentence)

(5) a. Der Magier gab den Kinder einen Zauberstab.

   b. The magician gave the children a magic wand.

(6) a. Der Magier hat den Lehrling von seinem Vorhaben abgebracht.

   b. The magician accustomed the apprentice to magical habits.

(7) a. Der Magier lehrte die Kinder das Fürchten.

   b. The magician advanced the apprentice some money.

4

2.1 German

SUBJ: agrees with the verb
Nominative
OBJ: becomes SUBJ under Passivization
Accusative
OBJ$_\theta$ further objects
Dative or Accusative
OBL$_\theta$ PP Argument of the verb

(11) *der Magier* SUBJ (Nominative, subject-verb agreement), *den Kindern* OBJ$_\theta$ (Dative), *einen Zauberstab* OBJ (Accusative, becomes SUBJ under passivization

(12) *der Magier* SUBJ (Nominative, subject-verb agreement), *den Lehrling* OBJ (Accusative, becomes SUBJ under passivization), *von seinem Vorhaben* OBL$_\theta$ (PP argument of verb)

(13) *der Magier* SUBJ (Nominative, subject-verb agreement), *die Kinder* OBJ$_\theta$ (Accusative, does not become subject under passivization), *das Fürchten* OBJ (Accusative, becomes SUBJ under passivization)

2.2 English

SUBJ: subject-verb agreement
Nominative
OBJ: becomes SUBJ under passivization
immediately postverbal
OBJ$_\theta$ further NP arguments in the VP
OBL$_\theta$ PP argument of verb

(11) *the magician* SUBJ (Nominative, subject-verb agreement), *the children* OBJ (immediately postverbal, becomes SUBJ under passivization), *a magic wand* OBJ$_\theta$ (further NP argument in the VP)

(12) *the magician* SUBJ (Nominative, subject-verb agreement), *the apprentice* OBJ (immediately postverbal, becomes SUBJ under passivization), *to magical habits* OBL$_\theta$ (PP argument of verb)

(13) *the magician* SUBJ (Nominative, subject-verb agreement), *the apprentice* OBJ (immediately postverbal, becomes SUBJ under passivization), *some money* OBJ$_\theta$ (further NP argument in the VP)

3 Lexical Rules

(5 points for the lexical rule, 8 points for further information on argument alternations)

3.1 German

(8) a. Die Menschen glaubten dem Kanzler.

b. Dem Kanzler wurde von den Menschen geglaubt.

The lexical rule covering examples as in (8) is given in (9). The subject becomes an oblique, but only in the context of a passive (ensured by the constraining equation) and only if there is no direct object in the clause (to make sure it does not apply to normal agentive transitive verbs).

(9) SUBJ $\longrightarrow$ OBL$_{ag}$
$\neg(\uparrow\text{OBJ})$
$(\uparrow\text{PASSIVE}) =_c +$

Other forms of passivization in Geman include:

- A stative passive (*Zustandspassiv*): *Der Brief ist geschrieben.*

- *Kriegen*-Passive: *Hans kriegte den Brief von Peter geschrieben.*

- *Bekommen*-Passive: *Hans bekam den Brief von Peter geschrieben.*

3.2 English

(10) a. The child sprayed the wall with paint.

b. The child sprayed paint onto the wall.

6

The lexical rule covering examples as in (10) is given in (11). The direct object becomes an oblique and the former oblique becomes the direct object. This can only happen with locative/spatial verbs.

(11) OBJ $\longrightarrow$ OBJ$_\theta$
      OBL$_\theta$ $\longrightarrow$ OBJ
      ($\uparrow$VTYPE) $=_c$ loc

Other kinds of verbs work that work like *spray* in (11) are *load, fill, paint*.

Verbs like *swarm* can also participate in an argument alternation, as shown in (12). In this case the subject is realized as an oblique and the former oblique is realized as the subject.

(12) a. Bees swarmed in the garden.

      b. The garden swarmed with bees.

4   C-Structure Configurations (15 points)

Analyse the sentences in (13a) and (13e) by providing a c-structure tree and a corresponding f-structure.

(13) a. bɪlli=ne   kʊtte=ko   bʰɑgaya
         Katze=Erg Hund=Acc jagte
         'Die Katze verjagte den Hund.'

      b. bɪlli=ne bʰɑgaya kʊtte=ko

      c. bʰɑgaya bɪlli=ne kʊtte=ko

      d. bʰɑgaya kʊtte=ko bɪlli=ne

      e. kʊtte=ko bʰɑgaya bɪlli=ne

      f. kʊtte=ko bɪlli=ne bʰɑgaya

The permutations in (13) do not provide any evidence for a VP-constituent. It therefore would seem to make sense to assume the exocentric categorie S for Urdu.

C-structure (13a)

```
              S
      ┌───────┼───────┐
     NP      NP       V
      │       │       │
  bɪlli=ne kʊtte=ko bʰɑgaya
```

C-structure (13e)
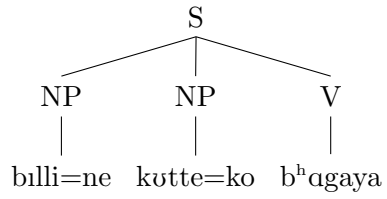
```
              S
      ┌───────┼───────┐
     NP       V       NP
      │       │       │
  kʊtte=ko bʰɑgaya bɪlli=ne
```
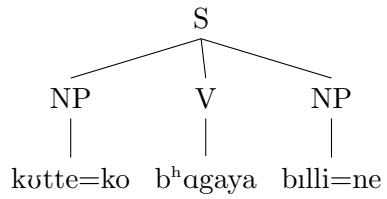
F-structure

The f-structures for both of the sentences are the same (indeed, it is the same for all of the sentences in (13). There is a difference in surface linear order, but not in terms of the underlying predicate-argument structure of the sentences.

(14)
$$
\begin{bmatrix}
\text{PRED} & \text{'b}^{\text{h}}\text{ag}<(\uparrow\text{SUBJ}) (\uparrow\text{OBJ})>' \\
\text{CLAUSE-TYPE} & \text{declarative} \\
\text{TNS-ASP} & \begin{bmatrix} \text{MOOD} & \text{indicative} \\ \text{TENSE} & \text{past} \end{bmatrix} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'cat'} \\ \text{CASE} & \text{erg} \\ \text{GEND} & \text{fem} \\ \text{PERS} & 3 \\ \text{NUM} & \text{sg} \end{bmatrix} \\
\text{OBJ} & \begin{bmatrix} \text{PRED} & \text{'dog'} \\ \text{GEND} & \text{masc} \\ \text{CASE} & \text{acc} \\ \text{PERS} & 3 \\ \text{NUM} & \text{sg} \end{bmatrix}
\end{bmatrix}
$$