Takhleeq ++

1. Language overview:

Takhleeq ++ is a uniquely designed urdu inspired programming language that merges creativity with logic. It uses transliterated Urdu words for control structure, functions, and input/output commands. The main goal is to make programming intuitive for urdu-speaking learners while keeping the structure close to c++.

In Takleeq ++, programmers write logic statements in natural Urdu flow, this helps build confidence before shifting to English based language.

Example:

C++ code:

```
if (num>0) {
    cout << "Positive"; }
```

Takhleeq ++ equivalent:

Takleeq ++ equivalent:

```
agr(x > 0) {
    likho "Positive"; }
```

2 - Keywords

Keyword	Equivalent	Example Usage
agar	if	agar (x >0)
warna	else	warna
jabtak	while	jabtak(x<10)
dohrana	for	dohrana(i=0; i<5, i++)
likho	print / cout	likho "Hello"
pao	cin	pao number
kaam	function	kaam sum ()
wapas	return	wapas 1
jab	switch	jab (choice)
hal	case	hal 1 : likho "Yes"
rukjao	break	rukjao
jari	continue	jari
agar bhi	else if	agarbhi (x==0)
shuru	begin	shuru {
khatam	end	khatam }

Theme: Blending the art of Urdu expression with the structure of modern C++ Syntax.

Purpose: To make programming feel like storytelling in urdu logical yet expressive.

Data Types of tekhleeq++:

Data Type	Equivalent in C++	Usage
adad	int	Used for storing whole eg. Adad umar=20;
chhotaadad	float	used for small decimal number e.g. chhotaaddad num=28.6;
baraadad	double	Used for precise or large decimal values eg Baraadad pi=3.14159;
harf	char	used for single characted eg. harf grade = 'A';
jumla	string	used for words or text e.g. jumla name="Ali";
haqeeqat	bool	Used for true/false conditions.
khali	void	Represend no value, used in functions. eg. khali dikhao();
adadisilsila	array	used for arrays.
shanakhtinumber	enum	used for creating custom values days.
khaaka	struct	used for grouping variables under one name.

| khazana | class | Equivalent to c++ class |
| ishara | pointer | points to memory address. |

3) Operators and Punctuations

Category	Symbol	Description
operator	+	Addition
operator	-	Subtraction
operator	*	Multiplication
operator	/	Division
operator	==	Equality check
Punctuation	;	statement terminator
punctuation	{ }	Block delimeters
punctuation	( )	used in conditions and functions

other Operators: +>, <+, <>, <>, <=, >=, =, !=, ++, --

4) Regular Expressions

Token Type	Regular Expression	Example
Identifier	$[a-zA-Z\_]^+ \cdot [0-9\ a-z\ A-Z\_]^*$	umar, totalMarks, result1
Number	$(+/-)? [(0-9)^+ + [0-9]^* (.) [0-9]^+]$	123, 45, 12.5, 3.14
Operators	$== \| +> \| <+ \| <> \| <= \| >= \| != \| ++ \| -- \| - \| + \|$	a+b, a-b, c*d
Datatypes	Adad / chota Adad / BaraAdad / Harf / Jumla / Haqeeqat / Khali	Adad num = 12;

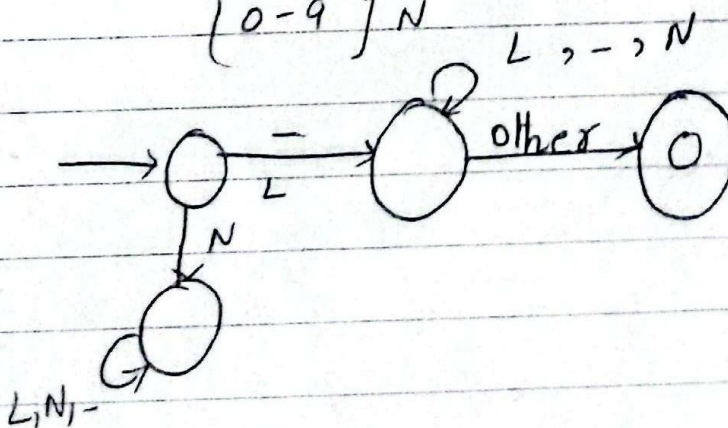| String Literal	\"[^\"]*\"	"Hello Dunyia"
Punctuation	[\(\)\{\};]	;,(,)
White space	[\t\n\r]	space, tab
SL Comment	//[^\n]*	
Multi line comment	/*([^*])	/* Thes is comment*/
Whitespace	[\t\n\r]+	space, \t (tab)

5- Finite Automata Diagrams:

(a) Identifier Automata:

[a-z A-Z] L

[0-9] N
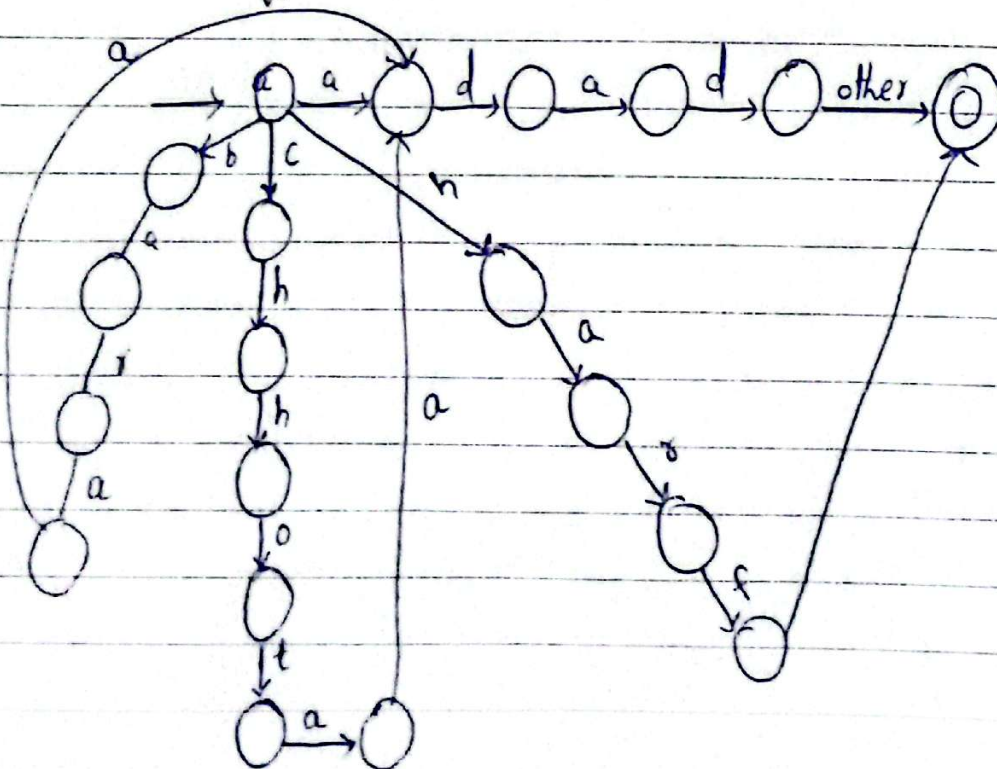
L,-,N

L,N,-
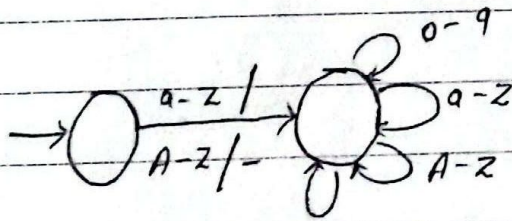
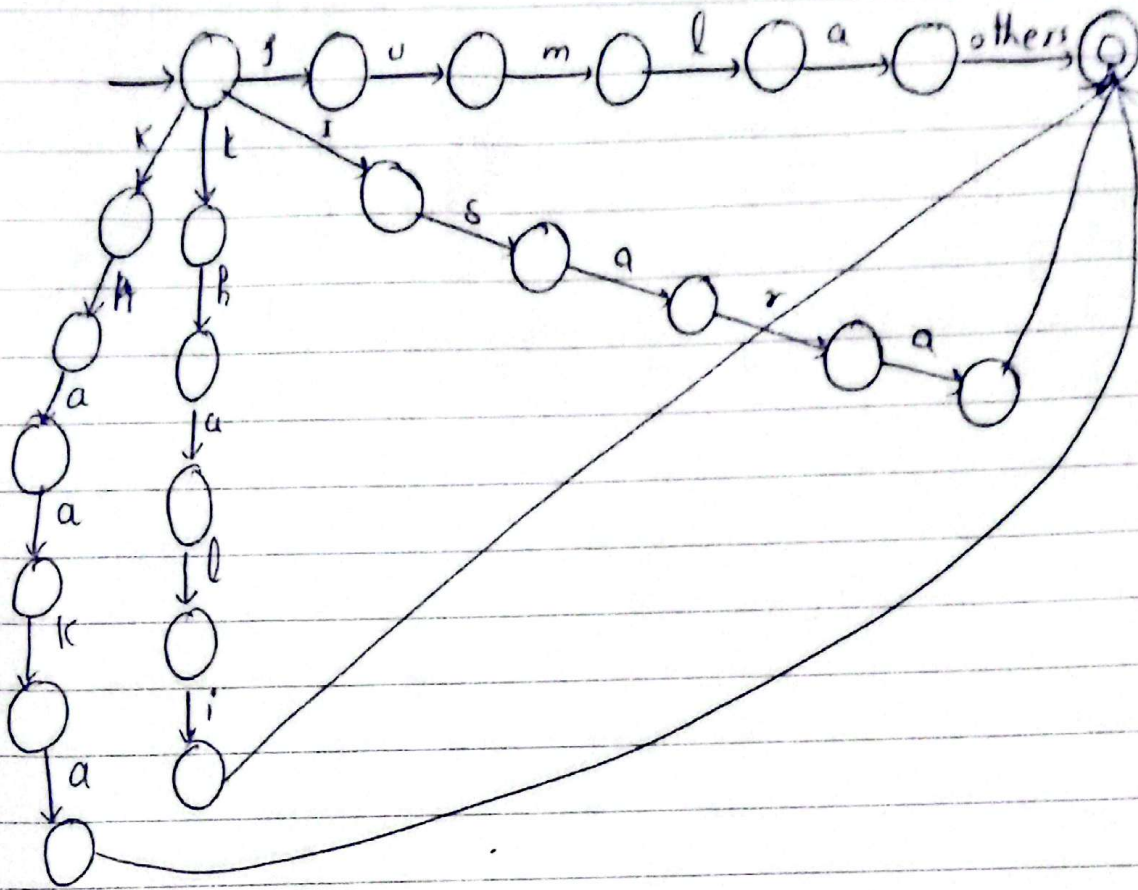## (b) Integer automata

$$[0-9]^+ \to N$$
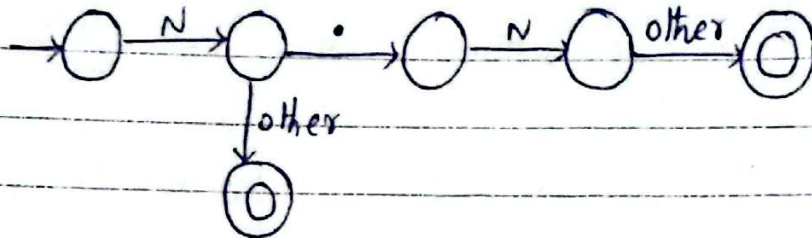
(c) String Automata:
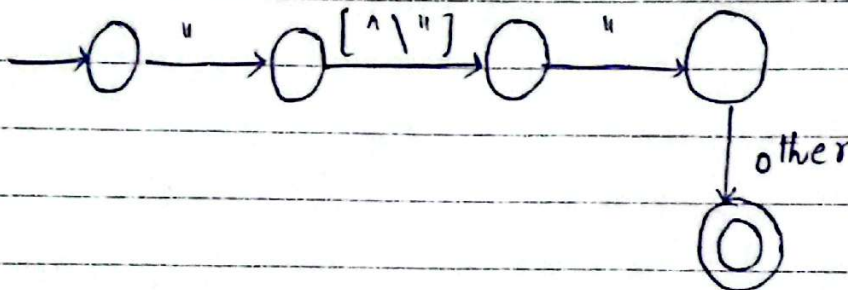
4) Datatypes

Explanation:

Why i choose Urdu keywords:

I choose urdu keywords so that new learners can understand logic and program flow more easily. Words like "agar" if and "warna" (else) help make coding feel natural to urdu speakers.

What makes Tekhleeq++ unique:

- Uses Urdu transliterred syntax, bridging the gap between logic and language.
- keep c++ structure
- Easy reaability for beginners in Pakistan.