Compiler Construction (G1)

Assignment – 01

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1. Language Overview :-

Hogwarts ++ is a fun magical version of C++. Works just like C++, but all the words sound like spells.

The programmer is like a wizard who uses code as magic. It makes programming more interesting and fun.

2. Key words

↳ Capitals only used for Readability.

Sr.	Kewords	Meaning/Equivalent	Exp usage
1	NUMSPELL	int	numspell score = 100;
2	TEXTSPELL	String	textspell name = "Ali";
3	FLOATSPELL	double	floatspell power = 5.98;
4	TRUTHCHARM	bool	truthcharm isWizard = TRUE;
5	VOIDCHARM	void	voidcharm read()
6	BEGINMAGIC	main	numspell beginmagic()
7	RETURNCHARM	return	returnchar 0;
8	House	class	House Wizard{ };
9	IFCHARM	if	ifcharm (x > 70) {}
10	ELSECHARM	else	elsecharm {}
11	LOOPCHARM	while	loopcharm (x > 70) {}
12	SPELLCYCLE	for	spellcycle (i=0; i<5; i++) {}
13	BREAKCURSE	break	breakcurse;
14	SKIPCURSE	continue	skipcurse;
15	REVEAL	cout	reveal << "printed";
16	LISTEN	cin	listen >> x;

↳ All will be lower case

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3. Operators & Punctuators

	Category	Symbol	Description
1	Operator	+	addition
2	"	-	Subtraction
3	"	*	Multiplication
4	"	/	Division
5	"	#=	Equal to
6	"	=	Assignment
7	"	#+	increment
8	"	#-	Decrement
9	"	<, >, <=, >=	comparison
10	"	#!	Not equal
1	Punctuators	$	Statement Terminator
2	"	{}	Block of Code
3	"	()	Parenthesis (function / condition)

4. Regular Expressions (RE)

1) Identifiers :-

{Don't want(-) in my lang}

$$[A\text{-}Z\ a\text{-}z]^{+} \cdot [a\text{-}z\ A\text{-}Z\ 0\text{-}9]^{*}$$

2) Numbers :-

$$[+/-]?\ [(0\text{-}9)^{+} / (0\text{-}9)^{*}(.)(0\text{-}9)^{+}]$$

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3) Operators :-

[+ / - / #= / #+ / #- / #! / * / (/) / = / < / > / <= / >=]*

4) Comments :-

[// (~\n) / (/*) (~* / *+~/)* (*/)]

5) Punctuators :-

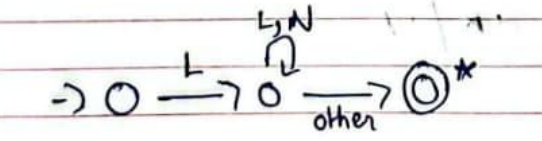
($ / { / } / (/))

6) Keywords :-

(numspell / textspell / ifcharm / All the other keywords listed in section ①)

5. Finite Automata Diagrams :-

1) Identifiers L = {A-Z a-z} N = {0-9}



2) Numbers

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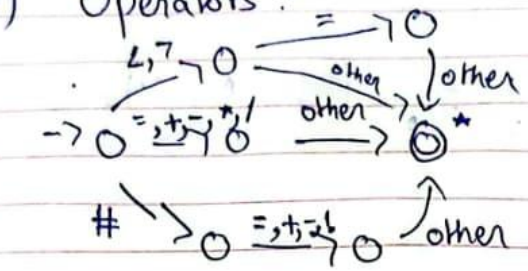
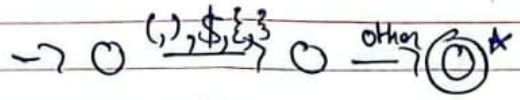
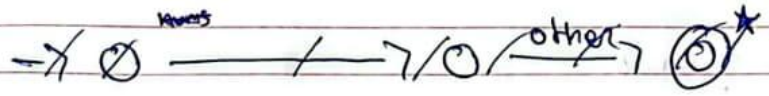
3) Operators :-



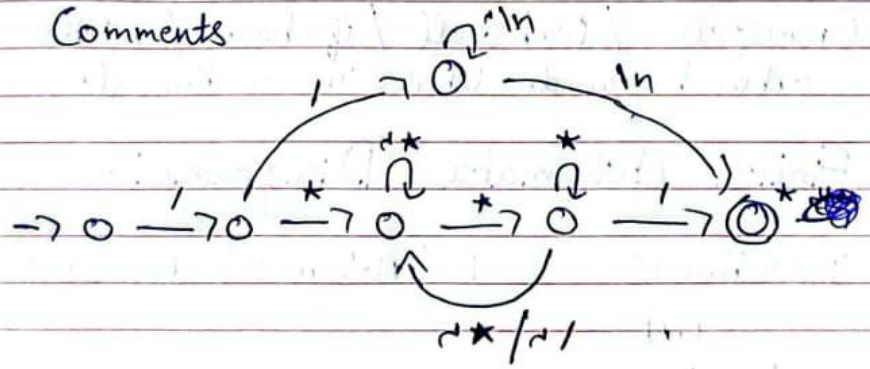
4) Punctuators



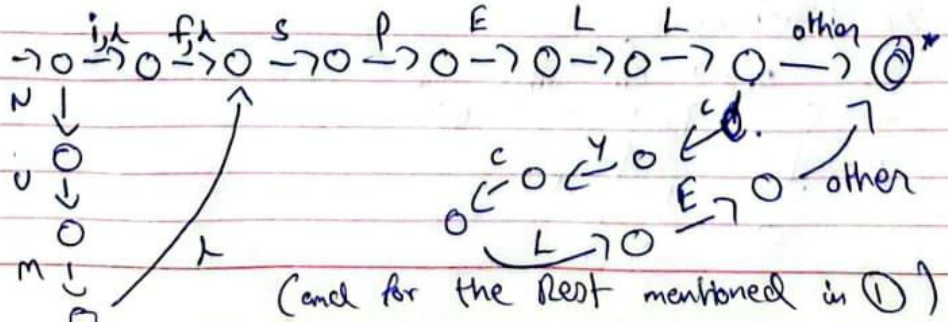
5)



Comments



6) Keywords



(same for the Rest mentioned in (1))

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6. Explanation

Hogwarks++ is made to be fun and simple. It works like C++ but its words are changed into magical words to make it more interesting.

Example:- → (Makes the words easier to remember)

Reveal → shows output (like cout)
listen → Takes input (like cin)
ifspell → for if condition
$ → used to end statement (;)
#= → To check equality (==)

These unique changes will make it more fun to code while learning the concepts of making a compiler from scratch. :)

(Makes use $ instead of ; to end the statement)