A

Project Report

on

"IFSC CODE VALIDATOR"

Submitted in fulfillment of the requirements

by

Mr. Vikas Rathod 1603030

Mr. Ameya Tanavade 1603022

Mr. Saurabh Kshirsagar 1603034

Mr. Kshitij Jagtap 1603036

Under the guidance of

Prof. S.S. Howal.

DEPARTMENT OF COMPUTER SCI. & ENGG

K.E Society's

RAJARAMBAPU INSTITUTE OF TECHNOLOGY,

(an autonomous institute)

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IFSC code validator: Report

Introduction :

Most of us have heard of IFSC codes. We have used it to make money transfers and many might have even noticed the codes printed on bank cheque books. This code validator is used to check whether the given IFSC code is valid or not. If the code is not valid then the system generates the valid IFSC code using their account number.

Problem statement:

To generate valid IFSC codes using account numbers for invalid entry of IFSC code.

Problem description:

IFSC essentially stands for'Indian Financial System Code'and forms an essential part of the Indian banking infrastructure. An IFSC code is a unique identification code that is used to identify the bank and branch of any particular bank account, and are used in bank transfer systems like NEFT, RTGS and IMPS.

Every code contains 11 alphanumeric characters. The first four characters are alphabets and used to identify the bank name; the last six characters are numeric or alphanumeric and used to indicate the branch code. The fifth character in the code is zero and always remains constant for all codes.

Here is an example:

IFSC Code: PUNB 0 392500

The first four characters are PUNB, refers to Punjab National Bank. The last six characters refer to the particular branch of the bank, which in this case is Mahalakshmi Layout Branch, Bangalore

IFSC codes are allotted by the Reserve Bank of India (RBI) and these codes are unique, meaning that no two banks or branches can have the same code.

IFSC code consists of the following. It is eleven digit alphanumeric code

For example: the system adopted in CANARA BANK

CNRB0002345

The first four alpha characters represent the bank name in short form Next zero is a control number The last six numerical digits represent the branch code Now let us see one account number:

2345101023568

The account consists of thirteen digits expressed in numerical characters The first four digit represents the branch code The next three digit represents the account category - current, savings, overdraft, recurring deposit etc., The last six digits represent the account number Let us imagine you are having account number as mentioned above pertaining to one account with CANARA BANK. Look at the first four digits - 2345 - they represent branch code Now you can find out the IFSC code of the branch in a simple manner : CNRB0002345

System Design:

To perform above task, we are going to use LEX and YACC programming.

Phases of compiler for IFSC validator:

Lexical Analysis:

Lexical analysis is the first phase of a compiler. It takes the modified source code from language preprocessors that are written in the form of sentences. The lexical analyzer breaks these syntaxes into a series of tokens, by removing any whitespace or comments in the source code.

If the lexical analyzer finds a token invalid, it generates an error. The lexical analyzer works closely with the syntax analyzer. It reads character streams from the source code, checks for legal tokens, and passes the data to the syntax analyzer when it demands.

Eg. PUNB 0 392500

<id1,1>= ”PUNB”

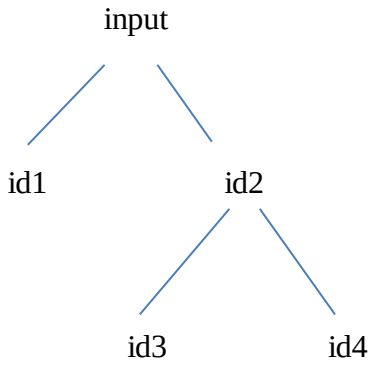
<id2,2>= ”id3id4”

<id3,3> = “0”

<id4,4>= ”392500”

Syntax Analysis:

Syntax Analysis or Parsing is the second phase, i.e. after lexical analysis. It checks the syntactical structure of the given input, i.e. whether the given input is in the correct syntax (of the language in which the input has been written) or not. It does so by building a data structure, called a Parse tree or Syntax tree. The parse tree is constructed by using the pre-defined Grammar of the language and the input string. If the given input string can be produced with the help of the syntax tree (in the derivation process), the input string is found to be in the correct syntax. if not, error is reported by syntax analyzer.



Sematic Analysis:

Semantics of a language provide meaning to its constructs, like tokens and syntax structure. Semantics help interpret symbols, their types, and their relations with each other. Semantic analysis judges whether the syntax structure constructed in the source program derives any meaning or not.

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CFG + semantic rules = Syntax Directed Definitions
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For example:

```
int a = "value";
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should not issue an error in lexical and syntax analysis phase, as it is lexically and structurally correct, but it should generate a semantic error as the type of the assignment differs. These rules are set by the grammar of the language and evaluated in semantic analysis. The following tasks should be performed in semantic analysis:

- Scope resolution
- Type checking
- Array-bound checking

Intermediate Code Generator :

In the analysis-synthesis model of a compiler, the front end of a compiler translates a source program into an independent intermediate code, then the back end of the compiler uses this intermediate code to generate the target code which can be understood by the machine.

t2 = id3id4

t1 = id1t2

input = t1

Code Optimization :

The code optimization in the synthesis phase is a program transformation technique, which tries to improve the intermediate code by making it consume fewer resources (i.e. CPU, Memory) so

that faster-running machine code will result. Compiler optimizing process should meet the following objectives:

- The optimization must be correct, it must not, in any way, change the meaning of the program.
- Optimization should increase the speed and performance of the program.
- The compilation time must be kept reasonable.
- The optimization process should not delay the overall compiling process.

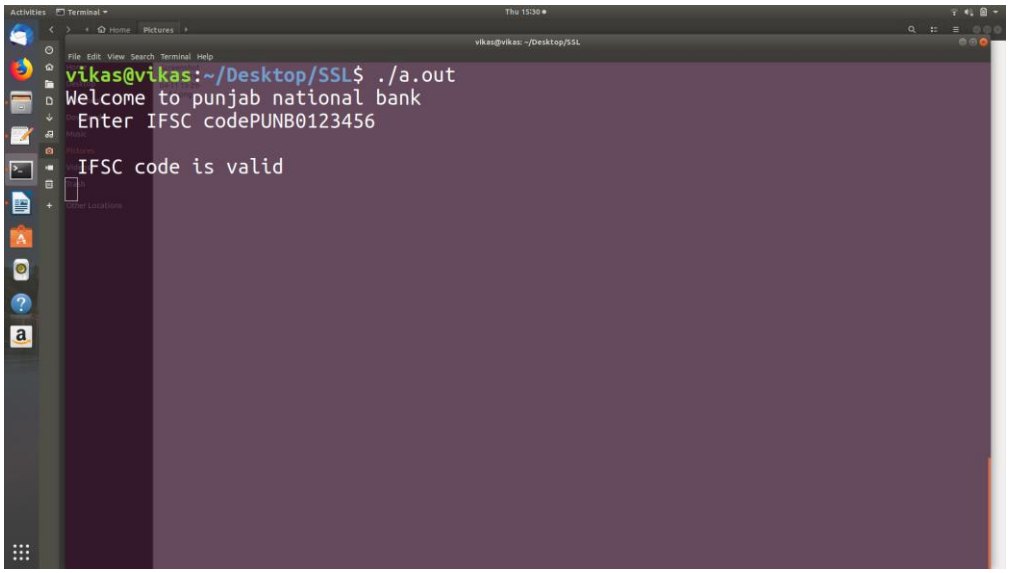
t2=id3.id4

t1=id1.t2

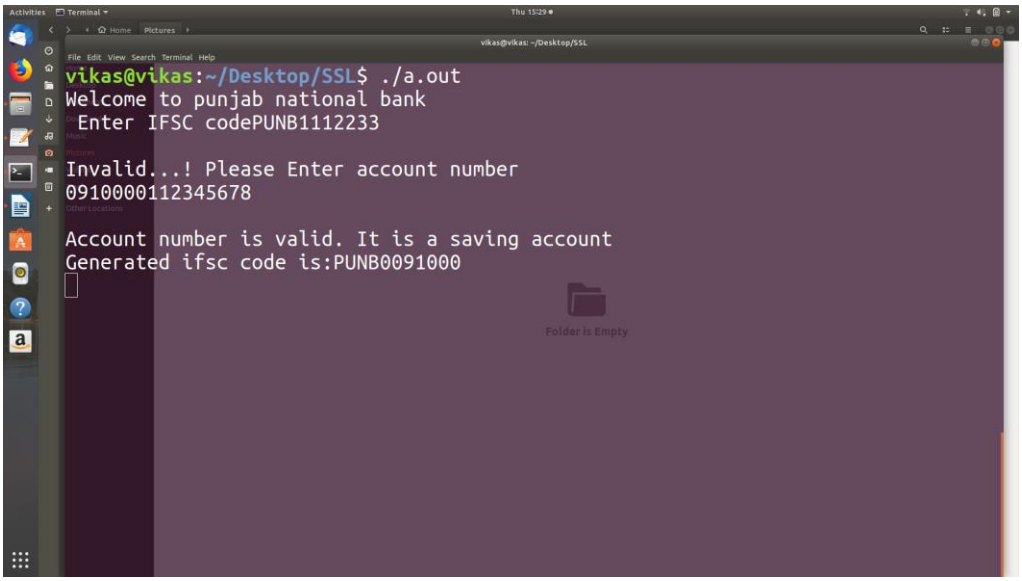
Conclusion:

From above results, we conclude that IFSC code validator is successfully used to check whether the given code is valid or not and also used to generate valid IFSC code using only account number.

Screenshots:



Picture1. Valid IFSC code output



Picture2. Invalid IFSC code output

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2. https://www.goodreturns.in/ifsc-code/
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4. https://economictimes.indiatimes.com/wealth/ifsc-bank-code