SETL (C) Newsletter # 11-LITTLE Newsletter 26 August 1973

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Plan for the development of a LITTLE compiler for the BESM 6.

The development of a LITTLE compiler for the BESM6 we plan to use a 'bootstrap' method, based on the LITTLE compiler implementation for the CDC 6600 at New York University. In this bootstraping scheme the compiler is arranged into two parts:

1) The preprocessor, which performs lexical and syntactic analysis and macro expression;
2) The code generator, which translates the sytactically analysed program into machine code or into assembly language.

A running compiler system is considered as consisting of preprocessor code and code-generator code. In moving the compiler to a new machine, one must obtain preprocessor code and code-generator code for the new machine. To this end one will use the following existing files:

C - the compiler code for the CDC 6600;
AC - the code-generator code for the CDC 6600;
LP - the LITTLE preprocessor written in LITTLE.

one must write the following files:

LAB - LITTLE code for a BESM-6 code-generator;
LI - a BESM 6 interpreter in LITTLE, to run on the CDC 6600.

Bootstrapping Scheme

ABC =	C(LAB,AC)	create a BESM 6 code generator to run on the 6600;
AB =	C(LAB,ABC)	create a BESM 6 code generator to run on the BESM 6;

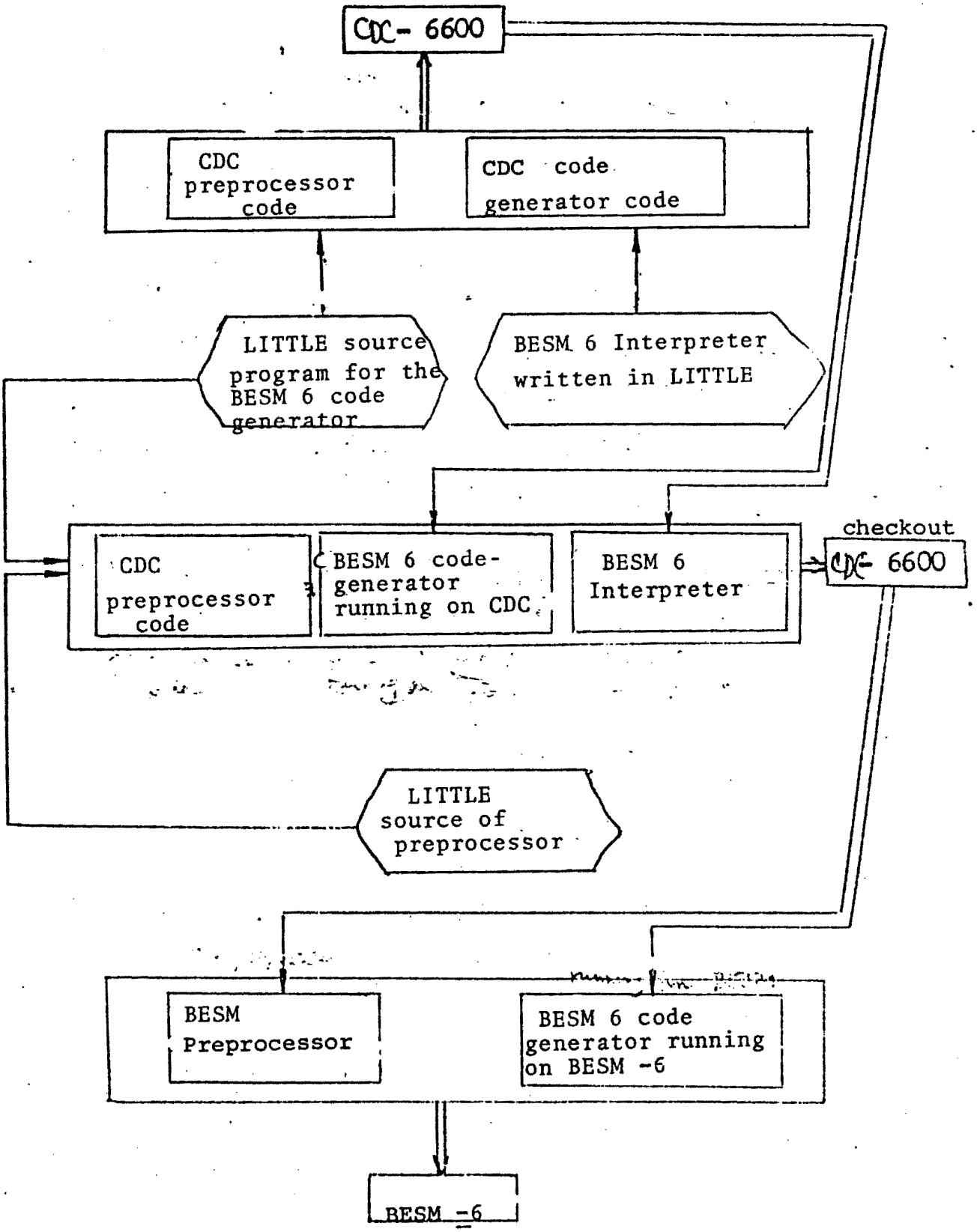
PB = C(LP, ABC)	create a BESM 6 LITTLE preprocessor;
I = C(LI, AC)	create a BESM 6 interpreter to run on the CDC 6600.

With the aid of the interpreter we can develop and checkout a working program for the BESM 6, functionally equivalent to the corresponding program for the CDC 6600.

In summary, the scheme for generating programs in CDC 6600 code is similar to that which would be used to generate programs in assembly language or from a macro assembler. More detailed consideration of the means of moving the LITTLE compiler onto the BESM 6 should be deferred until we are familiar with the details of LITTLE language, the compiler, and the CDC-6600 machine. We suggest that in the initial translation of files, the overall compiler logic should be preserved, and the machine-dependent parts kept separate.

The LITTLE source program required will be produced at the Novosibirsk Computing Center. The debugging and compilation of this source program will be undertaken in New York University on the CDC 6600.

Appendix


CDC- 6600
CDC preprocessor code
CDC code generator code
LITTLE source program for the BESM 6 code generator
BESM 6 Interpreter written in LITTLE
CDC preprocessor code
BESM 6 code-generator running on CDC
BESM 6 Interpreter
checkout
CDC- 6600
LITTLE source of preprocessor
BESM Preprocessor
BESM 6 code generator running on BESM -6
BESM -6