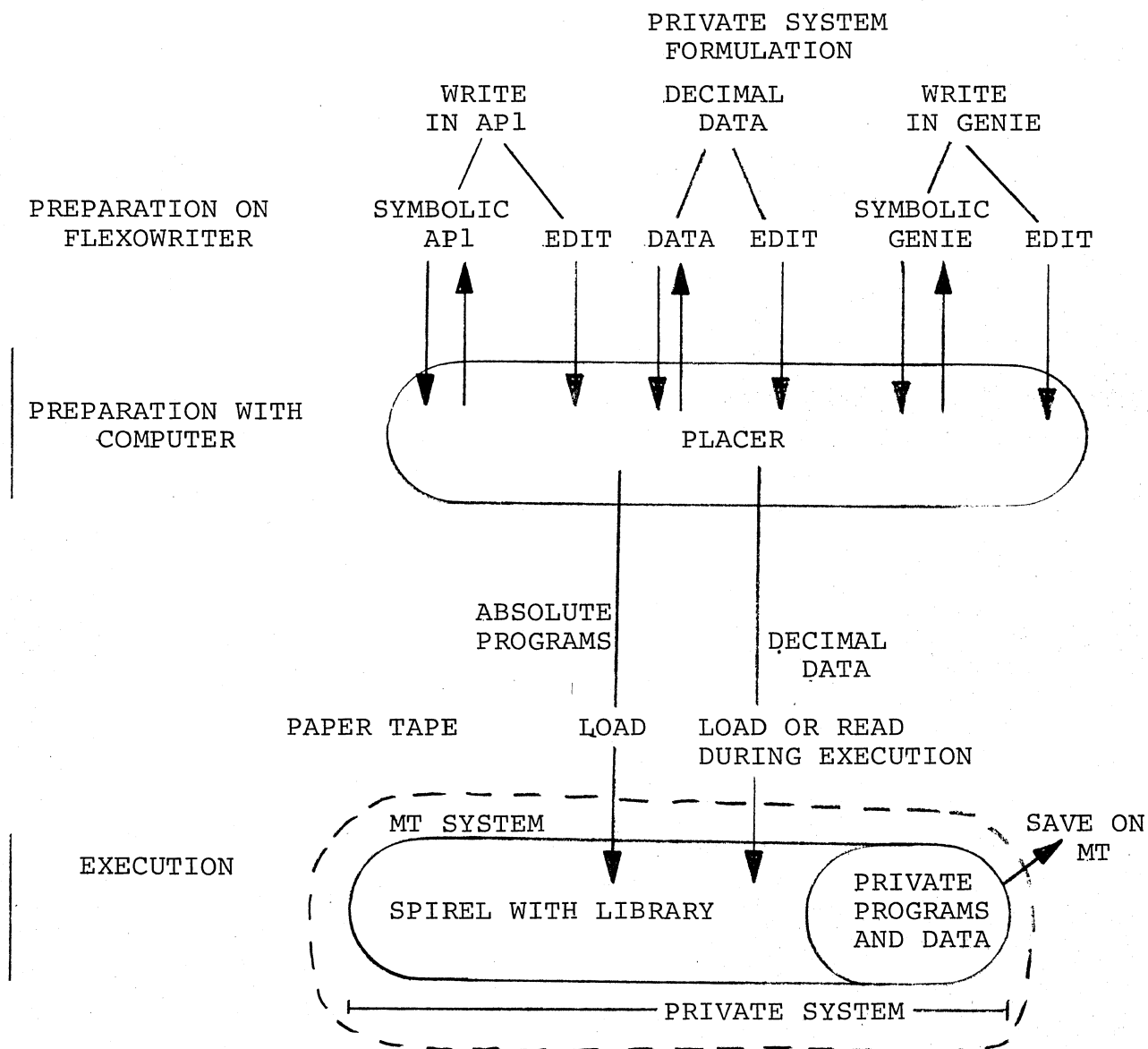How does one use the programming systems for the Rice Computer?

The solution to a private computing problem is a private system of programs and data. The diagram illustrates use of the Rice Computer programming systems in the construction and execution of a private system.

PRIVATE SYSTEM
FORMULATION

WRITE IN AP1   DECIMAL DATA   WRITE IN GENIE

PREPARATION ON FLEXOWRITER   SYMBOLIC AP1   EDIT   DATA   EDIT   SYMBOLIC GENIE   EDIT

PREPARATION WITH COMPUTER   PLACER

ABSOLUTE PROGRAMS   DECIMAL DATA

PAPER TAPE   LOAD   LOAD OR READ DURING EXECUTION

EXECUTION   MT SYSTEM   SAVE ON MT

SPIREL WITH LIBRARY   PRIVATE PROGRAMS AND DATA

PRIVATE SYSTEM

A <u>private system</u> consists of:

the operating system		private data
with library programs	+	and programs

So, private programs and data are added to SPIREL to form a private system.

    <u>SPIREL</u> is the operating system for the Rice Computer. It may be used from the console or dynamically by private programs for such operations as:

        reading
        correcting
        printing   } of programs and data
        punching
        execution of programs

Dynamic storage control is provided automatically by SPIREL, and various debugging aids are available in the system.

    The SPIREL system is composed of SPIREL and a library of programs which perform functions likely to be useful to private programs. Any private program in a private system built on SPIREL may use any library program as a subroutine. The library provides functions such as:

        trigonometric functions
        vector and matrix operations
        formatted printing and plotting

    The construction of a private system entails the preparation of private programs and data. <u>PLACER</u> is the programming system used for preparation of system elements; it has nothing to do with system execution. It works on one program or one data tape at a time, and provides the following operations:

        editing
        listing on the printer } of programs or data
        punching
        translation of programs from symbolic to executable
          form and vice versa

Programs are written in a symbolic langauge:

AP1, the assembly language in which statements correspond one-to-one with instructions to be executed by the computer

or Genie, the formula language in which mathematical notation is employed and which contains as a subset the AP2 assembly language

PLACER contains the AP1 assembly program and the Genie compiler. AP1 translates programs written in the AP1 language to executable form. The Genie compiler translates programs written in the Genie formula language to executable form.

The magnetic tape system provides

filling of memory from a block on magnetic tape

dumping of the contents of memory onto magnetic tape

SPIREL and PLACER are on magnetic tape and are read into memory by use of the magnetic tape system. Once a private system has been composed in memory, the magnetic tape system may be used to write the system onto tape. Subsequent use does not require loading of private items from paper tape.

May, 1967