literacy, national integration camps and adventure programme, etc. During 1989-90, about 5 lakhs rural youth have benefited from such programmes.

Software Packages for Sanskrit

3092.   SHRI PYARELAL KHANDEL-
WAL:
DR. A.K. PATEL:

Will the PRIME MINISTER be pleased to state:

(a) the software packages for Sanskrit available at present and which one among these are envisaged for development during the year 1990;

(b) whether some audio/audio-visual tapes have been prepared for research purposes of the Vedic and ancient sciences depicting recitations and related procedures; if so, the details thereof;

(c) the software packages which are being made available for scholars; and

(d) whether Government have chalked out any blue print for the encouragement of such softwares and if so, the details thereof?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTER OF STATE IN THE DEPARTMENT OF EDUCATION IN THE MINISTRY OF HUMAN RESOURCES DEVELOPMENT (PROF. M.G.K. MENON): (a) to (c). As part of the project at Centre for Development of Advanced Computing (C-DAC), Pune on the use of Sanskrit as a language for computers, some programming environments have been developed which allow all Indian scripts including Devnagri to be used in Programming. Symbolic program-

ming languages like LISP and PROLOG can now be used for Sanskrit. In order to fully develop Paninian grammar on the computer for the purpose of investigating the use of Sanskrit for natural language processing, basic support tools, incorporating the grammer rules such as Sandhi, Vigrah, Shabdaroop and Dhaturoop have been developed using DISP. The prototype of an expert system shell called "Visheshgya" has been completed. This can be used by scholars of Sanskrit and ancient Indian sciences for entering knowledge on specific domains.

A Sanskrit Intelligent Tutoring System for 10th standard students has been developed which will help in the training of Sanskrit in Schools. Further software for the implementation of the rules of Paninian Grammar will be developed. Preliminary software development work done on the Sanskrit sentence Parser will be refined. Further work on Visheshgya will be undertaken.

A separate project on 'Computer Assisted Sanskrit Teaching/Learning Environment" has started at Jawaharlal Nehru University, New Delhi. Under these, basic design of the software for teaching alphabet, their properties, Sandhis have been undertaken. Also a nucleus software system has been designed which will be used in implementing the teaching/learning lessons and exercises. No audio-visual tapes have been prepared in this context for research purposes of the vedic and ancient Sciences.

(d) Department of Electronics has drawn up a programme, namely, Technology Development for Indian Languages (TDIL) for implementation during the Eighth Plan. This programme will include the development of various applications for Language Learning, Machine Translation, Human-Machine Interface etc. for Indian Languages including Sanskrit.