nies and it is one of the first languages to go into computerisation. I think parallel work is being done on all languages. Each language has its genius. Therefore it requires a different kind of research and a different kind of development.

Standard Code for Data Processing in Hindi

*778. SHRI RAM KAPSE: Will the PRIME MINISTER be pleased to state:

(a) whether a number of codes are being used by various manufacturers for data processing in Hindi;

(b) if so, the details thereof;

(c) whether there is any possibility to convert Hindi automatically from one code into another;

(d) whether any Standard code has been finalsed by the Department of Electronics in this regard;

(e) if so, the details thereof;

(f) whether this code is also a part of ISO code; and

(g) the names of the organizations which are following the DoE standard codes and their products?

THE MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS (SHRIMATI MARGARET ALVA): (a) to (g). A statement is laid on the Table of the Lok Sabha.

STATEMENT

(a) and (b) Yes, Sir. The latest draft standard for Indian Script Code for Information Interchange (ISCII) was adopted in 1991. This had passed through the 1983, 1986 and 1988 versions, which represented the process of refinement and analysis of the standard. The first attempt at standardization of the code for Indian languages including Hindi was made in 1983 which was revised in 1986 and 1988 to make it compatible with personal computers. This was adopted by the Bureau of Indian Standards as a draft standard for the Indian Script Code for Information Interchange (ISCII) in 1991.

(c) Automatic conversion from one code to another is possible in computers.

(d) and (e) The Bureau of Indian Standards (BIS) in collaboration with the Department of Electronics has finalised a draft Indian standard for Indian Script Code for Information Interchange (ISCII) in 1991.

(f) The draft ISCII code specifications have been sent to International Standards Organisation (ISO) for inclusion in their standards.

(g) The implementation of the ISCII standard code is done through the Graphic based Intelligence Script Technology (GIST). The names of the organisations to whom the GIST technology has been transferred are given in Annexure.

ANNEXURE

LIST OF ORGANISATIONS TO WHOM THE GIST TECHNOLOGY HAS BEEN TRANSFERRED

1. QUARK, Kanpur
2. Applied Electro Magnetics, New Delhi.
3. Blue Star, Bombay.
4. VSS, Bombay.
5. NITEL, Bhopal
6. Abacus Computers Limited, Bombay.
7. AMI Sanag Micromation Ltd., Hyderabad.

8. DatabysteEquipment Pvt. Ltd., Pune.

9. Data System Services Pvt. Ltd., Pune

10. KELTRON, Trivandrum.

11. Modi Olivetti Ltd., New Delhi.

12. Stritek Computers Pvt. Ltd., Hyderabad.

13. Uptron India Ltd., Lucknow.

14 DCM Data Products, New Delhi.

15. Hindustan Computers Ltd., Madras.

16. Atre Visuals Pvt. Ltd., Bombay.

17. Caditronics Pvt. Ltd., Ahmedabad.

18. CRIS, New Delhi.

19. Hindustan Teleprinters Ltd., Madras.

20. Indchem Electronics Ltd., Madras.

21. ORITECH Systems Pvt. Ltd., Bhubaneshwar.

22. Pycom Industries, Bombay.

23. RELL, Jaipur.

24. Thermax Ltd., Pune.

25. WIPRO, Bangalore.

26. All India Radio, Delhi.

SHRI RAM KAPSE: In her reply, the Minister has stated that different versions were prepared in 1983, 1986 and 1988. I would like to know whether these versions of the draft standard for Indian Script Code for Information Interchange are followed by NCST, Bombay, CDAC, Pune and CMC, Delhi. I ask this question because this standard code was prepared by their parent body, viz. the Department of Electronics. It was also endorsed by the Raj Bhasha Samithi and it was followed by private manufacturers also. But was it followed by our own Departments? That is my question.

SHRIMATI MARGARET ALVA: Sir, the work on producing a code was started in the Seventies and over the Years - in 1983, in 1986 and again in 1989 - there were improvements to make it more in tune with our requirements. In 1991, the standard code have been finalised jointly by all these institutions. It has been circulated for comments. It has also been sent to the International Standards Organisation for acceptance as standard code. I would only say that the changes that have come in over the years are because of improvements that took place. Now, finally we are trying to make what has been achieved in 1991, the standard code to be used by all. I do accept that perhaps not all have been using it at one time or the other. But the important point is that it was in the process of development and it is only in 1991 that the draft code is circulated. Since this is the finally accepted code, everybody would automatically follow the standard code.

SHRI RAM KAPSE: I am happy that the Minister has assured that now at least all the institutions will follow this code because this is the final version. But I would like to give some Information first and then ask a question.

The American Standard Code was prepared in the Seventies and it has not been reviewed till date. It is used both in communications and computers. As far as India is concerned and our regional languages are concerned, the Hindustan Teleprinters Limited, which is again our own organisation, is not using the standard code for its purposes. So, the facility of Telex and FAX is not available. I would like to ask whether ISCII, which has been adopted by the Bureau of Indian Standard, will be used both in the field of communication and computer so that exchange of information will be possible and compatibility can be achieved.

THE PRIME MINISTER (SHRI P.V.NARASIMHA RAO): I would like to inform the House and I am sure the hon. Member knows that even in the case of ASCII, the American Code, it took a long time to standardize it. There were lot of confusions before. Each country had its own code and each company had its own code. Only, when the confusion became worse then they finally settled down on the ASCII. These codes are capable of improvement from time to time. It is true that ASCII has been found to be very good so far. But, I cannot guarantee, no one can guarantee, that something better than this will not be discovered later.

In the case of Indian counterpart of the code, there have been different codes from time to time in quick succession - after every two or three years - which means that our engineers have been doing very quick and good work. Now, it has been standardised. We hope that it will not be needed to be further improved or further changed for some amount of time. But if there is any need, suppose we run into some difficulty, we cannot really say because we have finalised it, we will use it for all time. That is not there. But we hope that after so many attempts since they have standardized it; it will remain their for some time.

SHRI RAM KAPSE: My question was, whether they will be used for communication and computer both.

SHRI P.V. NARASIMHA RAO: Yes. Everyone will be forced to use it because in his own interest to use something standardised over the whole country is such better than to stick to something which has been earlier done but has been found to be not so perfect as the standard one. So, for all practical purposes, I' am sure, that it will be taken up. It may take a year or two to switch over to the new one but the standardised code is likely to be accepted by everyone.

SHRI PRITHVIRAJ D. CHAVAN: Sir, this is a very very serious area which affects the entire future growth of information technology in Indian languages. I am speaking on this with some personal knowledge. The crux of the question is, whether different manufacturers are using different codes. I know it for a fact that three organisations working under the Department of Electronics, that is NCST at Bombay, CMC Limited, Hyderabad and CDAC, Centre for Advanced Computers at Pune, are working in this area for some time and these three organisations use entirely different codes other than the 1983, 1986 and 1988 codes as the answer says. These codes refer to the work done by Indian Institute of Technology, Kanpur, which is further taken up by CDAC, Pune.

I know that there are commercial products being offered in the market by companies or Department of Electronics like ETT, which are based on the work of NCST, which are not compatible with the ISCII Code. My question is, after the 1991 standards, which will be in conformity with the ISO, will the Government of India force other institutions under DOE, that is CMC, NCST, to use the standard code.

MR. SPEAKER: It has been answered just now.

SHRI PRITHVIRAJ D. CHAVAN: But products are being sold even now. It requires conversion of code because if the data is generated in a different code - and voluminous data is generated - it is very difficult to convert it to the new standard. That is not a very happy situation.

MR. SPEAKER: Your question has already been answered.

SHRI PRITHVIRAJ D. CHAVAN: Sir, my specific question is, will the Government stop CMC and NCST from using their own codes which are not as per standard ISCII Code. They are entirely different codes.

SHRI RAM KAPSE: That is the real problem.

SHRI P.V.NARASIMHA RAO: This is a

real problem. This is bound to be a problem for some time until everybody accepts it. So far as Government is concerned, since there is a standardised code now and the Government is satisfied that this is the best so far. we will certainly ask the other institutions to fall in line.

As I said, if there are further improvements, say after five years or ten years, naturally, we will switch over to them. But this has happened in every country, everywhere machine languages have been tried. There has been so much of innovation and quick innovation and it has led to some confusion but finally, everything will find its level and I have no doubt that this will happen here also.

SHRIMATI MARGARET ALVA: Sir, all these institutions have been involved in drafting the Code. So, they won't oppose it.

SHRI NIRMAL KANTI CHATTERJEE: Sir, the generation is changing very fast.

Diploma in Computer Application Course in Hindi Medium

*780. SHRI VIRENDRA SINGH: Will the PRIME MINISTER be pleased to state:

(a) when Hindi medium was introduced in the Diploma in Computer Application Course;

(b) the number of books on each subject and video lectures prepared in Hindi since then;

(c) the scheme to accelerate production of books, videos, etc. for computer courses in Hindi medium; and

(d) the model centre to coordinate preparation of course material for computer course in Hindi medium?

THE MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PUBLIC GRIEVANCEWS AND PENSIONS (SHRIMATI MARGARET ALVA): (a) to (d). A statement is laid on the Table of the Lok Sabha.

STATEMENT

(a) Diploma in Computer Application in Hindi medium was introduced in 1984.

(b) At present, 9 books are available in Hindi medium for the following subjects on Computer:-

– Introduction to Computers	:	4
– Computer Programming	:	2
– Computer Hardware	:	1
– Computer Glossary Book	:	1
– Computer Assisted Learning	:	1

However, at present, there are no video lectures available in Hindi Medium for the course.

(c) Government has instituted an award scheme for authors writing original books on Electronics (including Computers).

(d) The Department of Electronics and the Commission for Scientific and Technical Terminology under the Ministry of Human Resource Development are coordinating the preparation of course material for computer courses in the Hindi Medium.

[*Translation*]

SHRI VIRENDRA SINGH: Which are the nodal centres co-originating the computer courses through Hindi medium?

[*English*]

SHRIMATI MARGARET ALVA: Sir, there are nine institutions which have been functioning, since 1984. We have been funding them. If the Member wants the list I will give it to him. There are nine institutions spread all over the country. I will send him