MIME

INTRODUCTION

- MIME stands for Multipurpose Internet Mail Extensions.

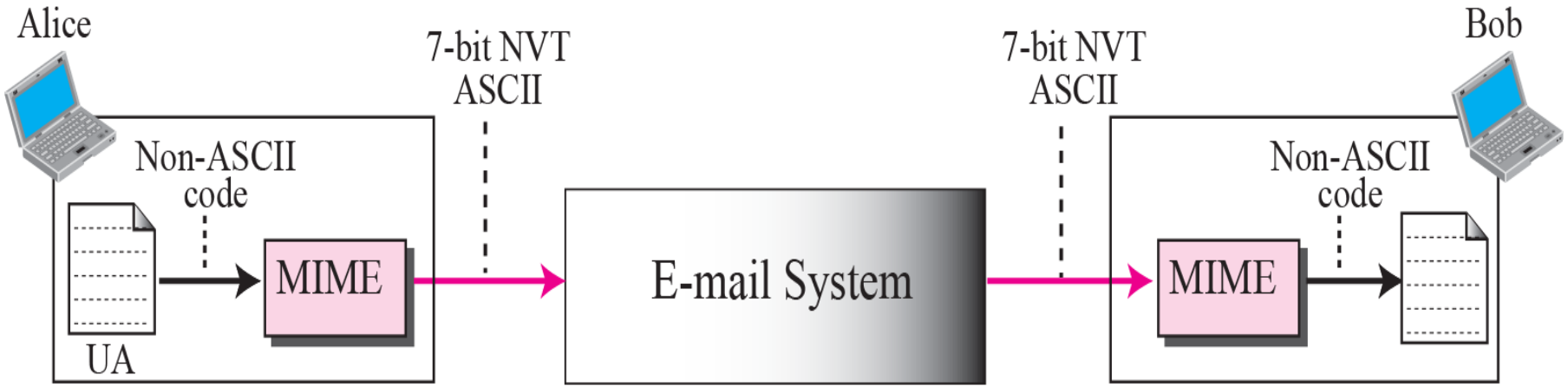
- MIME is a standard which was proposed by Bell Communications in 1991.

- It is widely used internet standard for coding binary files to send them as e-mail attachments over the internet. MIME allows an E-mail message to contain a non-ASCII file such as a video image or a sound and it provides a mechanism to transfer a non text characters to text characters.

Why do we need MIME ?

- To overcome the following limitations of SMTP:
  - SMTP cannot transfer executable files and binary objects.
  - SMTP cannot transmit text data of other language, *e.g.* French, Japanese, Chinese etc, as these are represented in 8-bit codes.
  - SMTP services may reject mails having size greater than a certain size.
  - SMTP cannot handle non-textual data such as pictures, images, and video/audio content.

Transforms non-ASCII data to NVT(Network Virtual Terminal) ASCII data



MIME SPECIFICATION

◎The MIME specification includes the following elements:

1. **Message header fields**. Five message header fields are defined. These fields provide information about the body of the message.
2. **Content formats**. A number of content formats are defined, thus standardizing representations that support multimedia electronic mail.
3. **Transfer encoding**. Transfer encoding are defined that enable the conversion of any content format into a form that is protected from alteration by the mail system.

MIME – Base 64 encoding

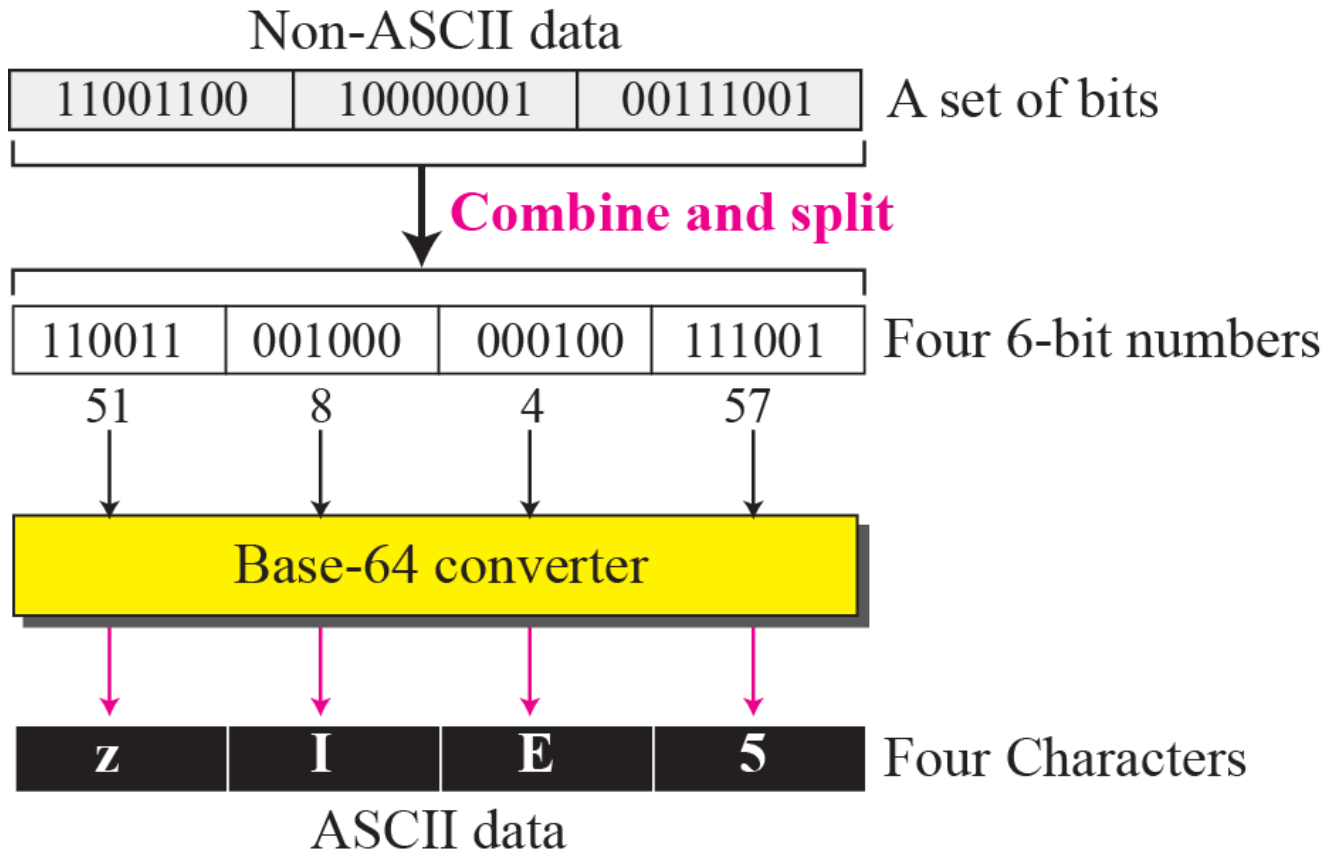
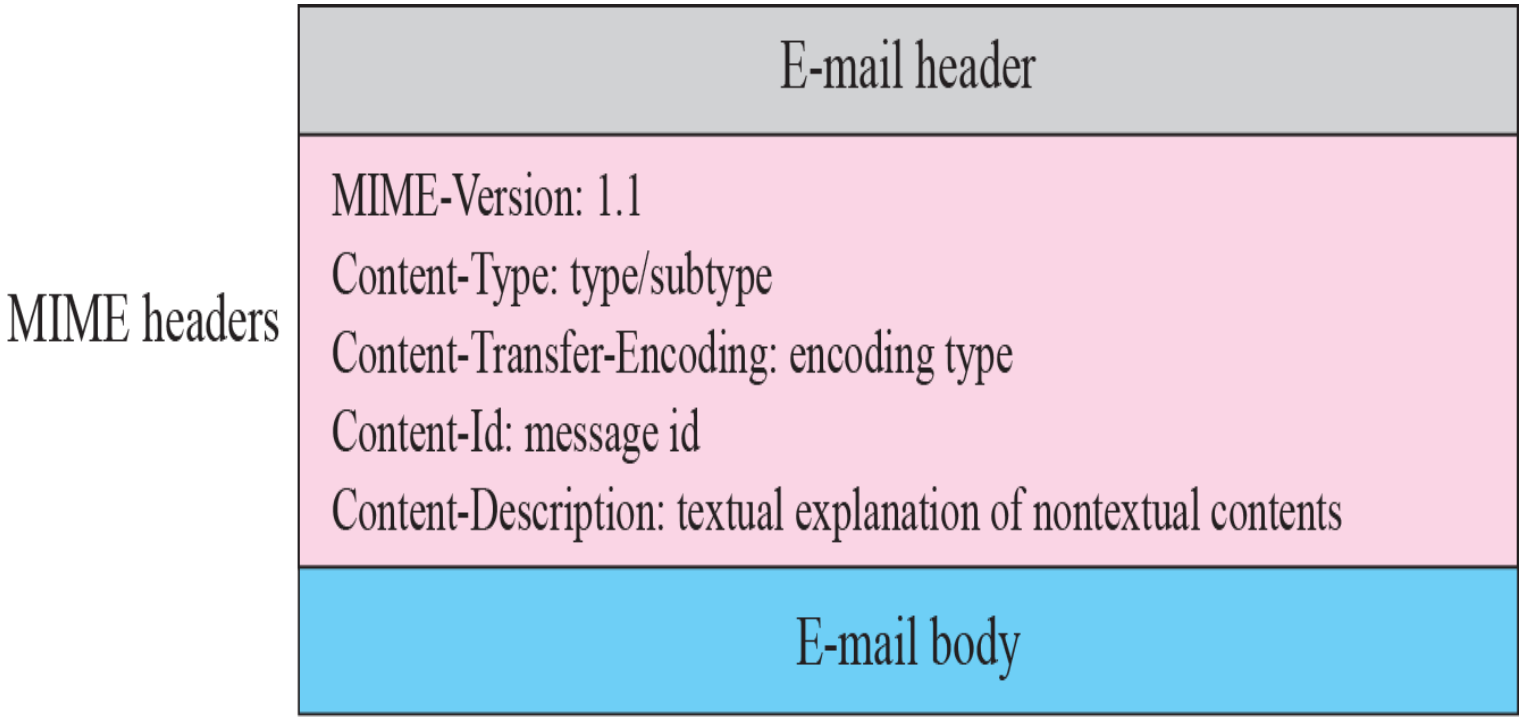


Table 23.5 *Base-64 Converting Table*

Value	*Code*	*Value*	*Code*	*Value*	*Code*	*Value*	*Code*	*Value*	*Code*	*Value*	*Code*
0	**A**	11	**L**	22	**W**	33	**h**	44	**s**	55	**3**
1	**B**	12	**M**	23	**X**	34	**i**	45	**t**	56	**4**
2	**C**	13	**N**	24	**Y**	35	**j**	46	**u**	57	**5**
3	**D**	14	**O**	25	**Z**	36	**k**	47	**v**	58	**6**
4	**E**	15	**P**	26	**a**	37	**l**	48	**w**	59	**7**
5	**F**	16	**Q**	27	**b**	38	**m**	49	**x**	60	**8**
6	**G**	17	**R**	28	**c**	39	**n**	50	**y**	61	**9**
7	**H**	18	**S**	29	**d**	40	**o**	51	**z**	62	+
8	**I**	19	**T**	30	**e**	41	**p**	52	**0**	63	/
9	**J**	20	**U**	31	**f**	42	**q**	53	**1**		
10	**K**	21	**V**	32	**g**	43	**r**	54	**2**		

MIME HEADER


E-mail header
MIME headers
MIME-Version: 1.1
Content-Type: type/subtype
Content-Transfer-Encoding: encoding type
Content-Id: message id
Content-Description: textual explanation of nontextual contents
E-mail body

MIME HEADER

- 5 header fields:

1.**MIME-version:** It indicates the MIME version being used. The current version is 1.1. It is represented as : MIME-version: 1.1.

2. **Content-type:** It describes the type and subtype of the data in the body of the message. The content type and content subtype are separated by slash. This field describes how the object in the body is to be interpreted. The default value is plaintext in US ASCII. Content type field is represented as:

Context-type: <type/subtype; parameters>

There are seven different types and fourteen sub-types of content. The various content type are listed in the table below:

Table 23.3 *Data Types and Subtypes in MIME*

Type	*Subtype*	*Description*
Text	Plain	Unformatted
	HTML	HTML format (see Appendix E)
Multipart	Mixed	Body contains ordered parts of different data types
	Parallel	Same as above, but no order
	Digest	Similar to Mixed, but the default is message/RFC822
	Alternative	Parts are different versions of the same message
Message	RFC822	Body is an encapsulated message
	Partial	Body is a fragment of a bigger message
	External-Body	Body is a reference to another message
Image	JPEG	Image is in JPEG format
	GIF	Image is in GIF format
Video	MPEG	Video is in MPEG format
Audio	Basic	Single channel encoding of voice at 8 KHz
Application	PostScript	Adobe PostScript
	Octet-stream	General binary data (eight-bit bytes)

3. **Content-transfer encoding:** It describes how the object within the body has been encoded to US ASCII to make it acceptable for mail transfer. Thus it specifies the method used to encode the message into 0s and 1s for transport. The content transfer encoding field is represented as :

Content-transfer-encoding : <type>

◎The various encoding methods used are given in the table below:

Table 23.4 *Content-Transfer-Encoding*

Type	*Description*
7bit	NVT ASCII characters and short lines
8bit	Non-ASCII characters and short lines
Binary	Non-ASCII characters with unlimited-length lines
Base64	6-bit blocks of data are encoded into 8-bit ASCII characters
Quoted-printable	Non-ASCII characters are encoded as an equal sign plus an ASCII code

4. **Content-Id.** It is used to uniquely identify the MIME entities in multiple contexts i.e. it uniquely identifies the whole message in a multiple message environment. This field is represented as:

Content-id : id = <content-id>

5. **Content-description.** It is a plaintext description of the object within the body; It specifies whether the body is image, audio or video. This field is represented as:

Content-description: <description>