



Data Entry and Keyboarding Skills

INTRODUCTION

In order to enhance operational skills in the use of computers, knowledge of efficient and effective keyboarding skills and typing ergonomics has become inevitable today. With consistent, sincere efforts and controlled environment, we can master keyboarding skills and acquire high speed. Keying data into the computer quickly and accurately, thus, becomes easy.

There are various methods of typewriting. In this unit, we will study about various types of keys, typing ergonomics and positioning of fingers on the keyboard according to touch method of typewriting and use of typing software for learning keyboarding skills.

Keyboarding Skills

Keyboard is the most common text-based input device. Computer keyboards are similar to electronic typewriter keyboards with additional keys. A keyboard generally has more than 100 keys. Each key of a keyboard corresponds to a single symbol. Some symbols require pressing and holding several keys simultaneously or in sequence. It allows entering alphabets, digits and

NOTES

symbols into the computer. Simultaneous key press can produce actions or computer commands. The touch method of typewriting is a method of typing without using the sense of sight to find the keys. There is no need to search the key while typing and one has to move only the finger which is needed to strike a key.

A touch typist knows the location on the keyboard through muscle memory. Touch typing typically involves placing the eight fingers in a horizontal row along the middle of the keyboard (the home row). Touch typing can be done with two hands or by using a single hand also.

A touch typist starts by placing his or her fingers on the “start position” in the middle row and knows which finger to move and how much to move it for reaching any required key. It is important to learn placing fingers into the start position blindly as the hands are frequently raised from the keyboard to operate the line feed lever (in the past) or (more recently) the computer mouse.

Typing speed generally improves with practice. The typing speed can be increased gradually and speeds of 60 WPM (words per minute) or higher can be achieved. The rate of speed increase varies between individuals. Many websites and software products (e.g., Rapid Typing Tutor) are available to learn touch typing and many of these are free. There are many such software available which are free of cost and are customised to learn typing efficiently and effectively.

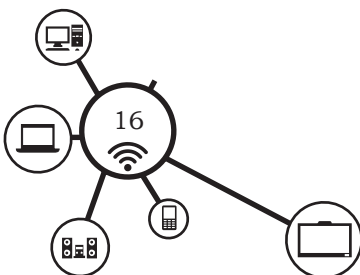
Keyboards are also used for computer gaming, either with regular keyboards or by using keyboards with special gaming features.

Types of keys

Though there are several input devices viz. mouse, touchscreen, character or voice recognition, etc., used for giving input to the computer, yet the use of keyboard is the most common method adopted for input of data into a computer. A computer keyboard contains the following types of keys:

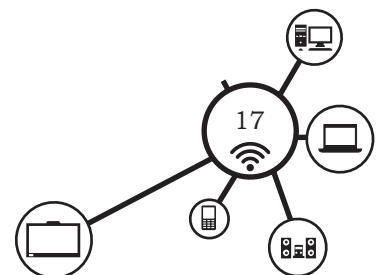
- **Alphanumeric keys:** All of the alphabet (A-Z) and numbers (0-9) on the keyboard.

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- **Punctuation keys:** All of the keys associated with punctuation, such as the comma (,), period (.), semicolon (;), brackets ([]), and parenthesis ({ }) and so on. Also, all of the mathematical operators such as the plus sign (+), minus sign (-), and equal sign (=).
- **Alt key:** Short for Alternate, this key is like a second control key.
- **Arrow keys:** There are four arrow keys to move the cursor (or insertion point) up (↑), down (↓), right (→), or left (←). Arrow keys can be used in conjunction with the
- **Shift or Alt keys:** To move the cursor in more than one position at a time.
- **Backspace key:** Deletes the character just to the left of the cursor (or insertion point) and moves the cursor to that position.
- **Caps Lock key:** It is a toggle key, which when activated, causes all alphabetic characters to be uppercase.
- **Ctrl key:** The control key is used in conjunction with other keys to produce control characters. The meaning of each control character depends on which program is running.
- **Delete key:** The Del key deletes the character at the current cursor position, or the selected object, but does not move the cursor. For graphics-based applications, the delete key deletes the character to the right of the insertion point.
- **Enter key or Return key:** It is used to enter commands or to move the cursor to the beginning of the next line.
- **Esc key:** The Escape key is used to send special codes to devices and to exit (or escape) from programs and tasks.
- **Function keys:** Special keys labelled F1 to F12. These keys have different meaning depending on which program is running.

When a key is pressed, an electrical contact is formed. These electric signals are transmitted to a



micro-controller in a coded form to the computer describing the character which corresponds to that key. Keyboards are used for text-based programs and software. In the modern GUI based operating systems and applications, more sophisticated pointing devices were evolved, such as mouse, joystick, scanner, etc.



Fig. 2.1: Numeric keys

Numeric keypad

Numeric keypad (Figure. 2.1) is used when enormous numeric data is to be entered. This keypad is just like a simple calculator. It is normally located on the right-hand side of computer keyboard. It contains numbers 0 to 9, addition (+), subtraction (-), multiplication (*) and division (/) symbols, a decimal point (.) and Num Lock and Enter keys. Numeric keypad may also work on dual mode. On one mode, it represents numbers and on the other mode, it contains various keys like arrow keys, page up, page down, etc. NumLock is provided to switch between the two modes. Usually, some of the keyboards of laptops do not have a numeric keypad.

Home keys

Alphabets ASDF are home keys for the left hand and; (semi-colon) LKJ for the right hand. The fingers are trained to make the correct movement to other keys and each finger returns immediately to its respective home key after it has depressed the corresponding key in any other row.

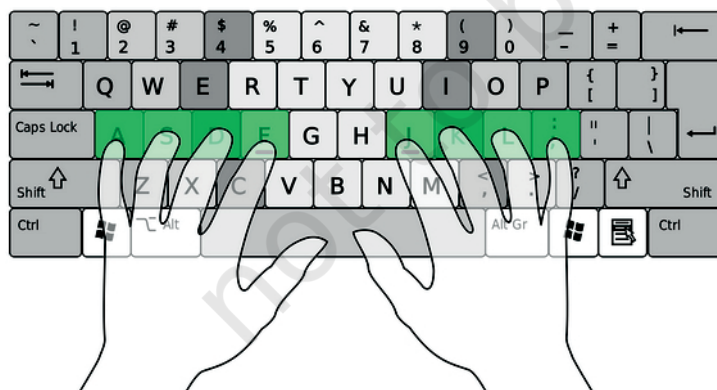
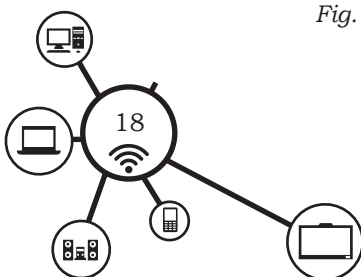


Fig. 2.2: Position on Home Row

Guide keys

On a computer keyboard, keys 'F' and 'J' are called guide keys for left and right hand, respectively. Both contain a small raised tangible mark with the help of which the touch typist can place the fingers correctly on the home keys. Figure 2.2 shows the position of fingers of both hands on the Home Row.



Typing and deleting text

For typing text in a document you should

- click on the letters on the keyboard.

For deleting text in a document you should

- use the backspace key or the delete key. The backspace key will remove text from behind (to the left of) your cursor position.

For typing numbers in a document you should

- use the numbers lock or the numbers on the second row of keys on the keyboard.

Typing capital letters

To type capital letters, switch ON the Caps Lock by pressing the key before typing. A light will shine on the top right side corner of the keyboard that shows Caps lock is on. To switch it off, tap on the Caps lock key before typing.

Typing symbols

Press and hold the key and then press the key with the required symbol. There are two Shift keys on the keyboard — to the bottom left and right of the letters. The Shift key is used to access the top symbols that are one of the keys with two characters.

Typing sentences

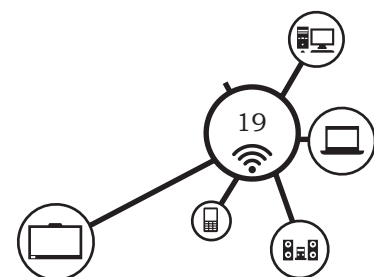
To get space between typed words, press the space bar once and then type the next word.

Creating new lines and spaces between paragraphs

The Enter or return key is used to create new lines and spaces between paragraphs. Make sure that the cursor is flashing from a new line. It is also used to authorise instructions asked for the computer to perform.

Guide for typing

The cursor keys serve as a guide for typing. They can be used to move the position of the cursor. The cursor is the small downward line that flickers in a sentence while typing. Move the position of the cursor by clicking the position with a mouse.



Pointing devices

Instead of typing, directly some items can be selected from computer screen, for example "print" or "close" button. This can be done using point and draw devices, such as mouse. Not only to select, but drawing of line, curve and shapes is also possible with such devices. Other examples of point and draw devices are joystick, light pea, touch pad or track ball and touch screen.

Mouse

Mouse is a pointing device used to point a particular place on the screen and select to perform one or more actions (Figure 2.3). It can be used to select menu commands, resize windows, selecting actions from screen icons, etc. A mouse primarily comprises of three parts: the buttons, the handling area, and the rolling object. By default, the mouse is configured to work for the right hand. The left-handed persons can change the settings as per the needs.

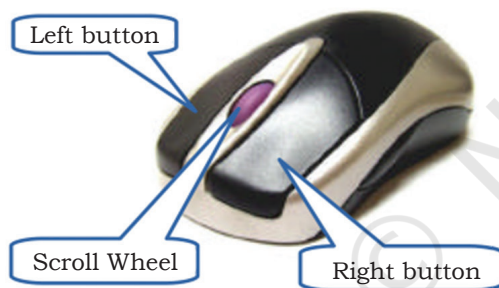


Fig. 2.3: Mouse buttons

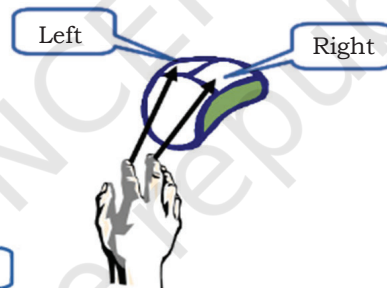


Fig. 2.4 (a) How to hold the mouse



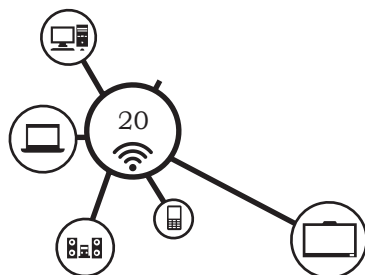
Fig. 2.4 (b) Position of fingers while holding the mouse

Put the right hand on the mouse, the index finger goes on the left button, and the middle finger goes on the right button (Figure 2.4 [a&b]). Hold the mouse with thumb and ring finger. To click, press a mouse button lightly and release it immediately.

Mouse pointer

The mouse pointer allows to point on the screen. The pointer changes as shown below.

☞ This mouse pointer will appear as you move it around the screen (it can also be used to move things).



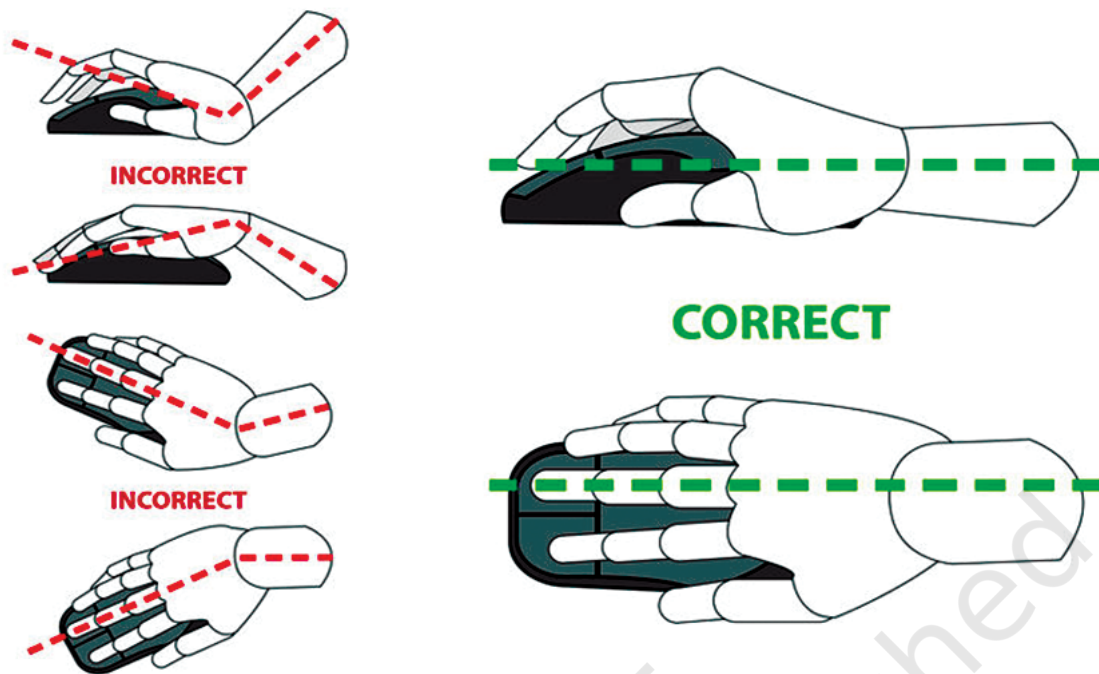


Fig. 2.4: Correct and incorrect positioning of fingers on the mouse

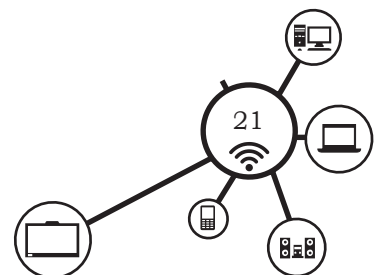
It will appear as you move it around the screen.

I This mouse pointer will also appear as you move it around the screen, particularly if it is over text. (This shape can be seen when you are about to type text.).

☞ While working on a web browser, the pointer change to a pointing finger symbol as moved it over the page. This identifies a hyperlink. Click the left mouse button once to follow the hyperlink to another page.

Mouse operations

All mouse do not use the same mechanical operation but all of them accomplish the same task. Some of them use a tracking ball at the bottom and some of them use a type of light beam to detect the motion of mouse. Laptops are equipped with a small flat surface or sometimes with a very short stick for performing same job as mouse. The most conventional kind of mouse has two or three buttons on its top. These buttons are used for different actions. Using left button of mouse different operations like selection, dragging, moving and pasting can be done. With the right button we can open a context menu for an item, if it is applicable.



NOTES

The common mouse actions are as follows:

- (a) **Click or left click:** It is used to select an item. Press down once on the left button with your index finger.
- (b) **Double click:** It is used to start a program or open a file or trigger an action.
- (c) **Right click:** It is used to display a set of commands and available options. Move the mouse pointer to the desired position, position your middle finger on the right mouse button, keeping the mouse still, click lightly with the middle finger on the right button.
- (d) **Drag and drop:** It allows to select and move an item from one location to another. Position the mouse on an object, hold down the left side of the mouse, and drag the object.
- (e) **Scroll:** Many applications provide scrollbars on right side of screen if the page length is more than the monitor/screen length. Instead of using page down key or arrow keys, one can use scroll key of a mouse to scroll up or down. If the scroll key is not available, one can click on the scroll bar on the application screen with the left button of the mouse. Use the scroll wheel on the mouse to move the page on the screen up or down.
- (f) **Blocking:** Blocking is another way of selecting text. It is used to select text that needs to be edited or formatted. Click at the beginning of the word or sentence and hold down the left button, then drag along the text and see it being highlighted in black. At the end of the text or sentence release the left button.

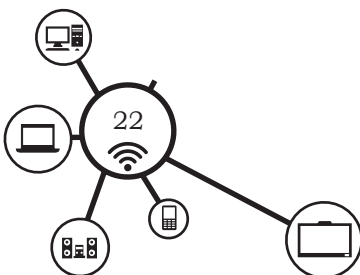
Typing ergonomics

Typing ergonomics provides the logistic support for efficient and effective typewriting. They are important to attain and maintain accuracy and speed. Some of these factors included are as given as below.

Sitting posture

While operating the computer keyboard, sit straight, slightly bending your neck forward. Check your comfort

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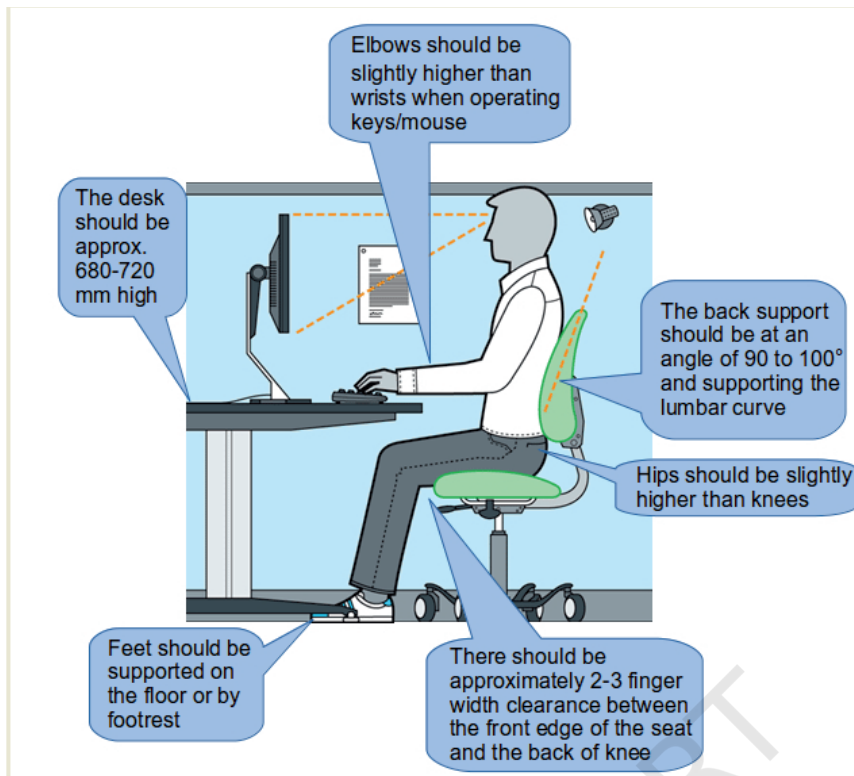


Fig. 2.5: Sitting posture while working on computer

and sitting position of body. Touch the lower portion of your back to the lower portion of the back rest of the chair. Touch both the feet to the floor (Figure 2.5).

Position of hands

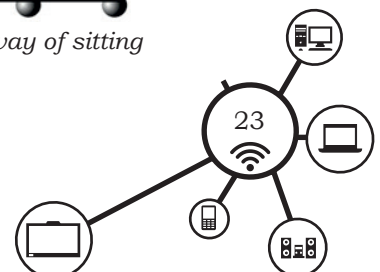
Put your forearms at level with the keyboard and palms down (Figure 2.6). Keep your wrists straight and hang



Fig. 2.6 Correct screen angle view



Fig. 2.7 Wrong way of sitting



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your elbows naturally. Don't touch the elbows to the body nor be too far away from the body (Figure 2.7). Bend at about a 90 degree angle.

Monitor placement

Do not bend your neck while working on the monitor and keep the upper border of screen at eye level. The distance of screen from the user depends on the size of the screen. Keep an approximate distance of about 60–65 cms for 17 inches screen.

Mouse and keyboard placement

Keep the keyboard and mouse together at an approximate distance of 20 cms, which will help in smooth and effortless operation of keyboard. Same height of keyboard, mouse and elbows helps the users to work comfortably.

Chair and table placement

Adjust computer chair and table to an optimal height. The chair of the computer user must be supportive to his/her lower back. Keyboard and vibrating devices, such as printers, should be on separate tables. The computer table should also have sufficient space for your legs. With the correct ergonomics, typewriting becomes a natural phenomenon without causing unnecessary fatigue.

Placement of matter to be typed

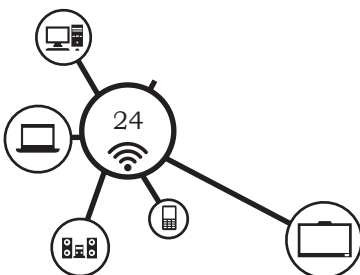
Place the matter for typing to the left or right side of the keyboard preferably on a Copy Holder which has a sloping surface.

Positioning of fingers on the keyboard

As typing is equivalent to pen or pencil now-a-days, mastery of computer keyboard has become obvious. Mastery typewriting skills means to attain necessary knowledge and skill of keyboard operation by correct positioning of fingers.

In the Home Row Approach, also called Horizontal Approach, all the eight fingers of both the hands rest on

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Home Keys during the keyboard operation. The fingers are trained to make the correct movement to the other keys in such a way that each finger returns immediately to its home key after it has depressed the corresponding key in any other row. The thumb of the right hand is used to operate the Space Bar.



Fig. 2.8: Allocation of keys to fingers

Allocation of keys to fingers

The keyboard learning process starts from the second row (Home Row) followed by the Third Row (Upper Row), First Row (Bottom Row) and the Fourth Row (Number Row). The fingers of both the hands have to operate the keys allotted to them on each row (Figure 2.8). It must be remembered that each finger has to operate only the key allotted to it.

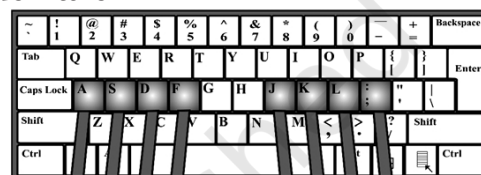


Fig. 2.9: Positioning of fingers on the Home row

Allocation of keys to fingers on the second row (home row)

Place four fingers of each hand on Home Keys as shown in Figure 2.9. The remaining two keys 'g' and 'h' on the second row are operated by the forefingers (Index Finger) of left and right hand, respectively.

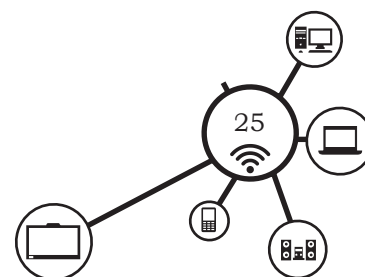
Let's Practice 1

A. Type the following in double line spacing to get perfection over the Home Row.

*asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh
 asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh
 asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh*

Instructions:

- Do not look at the keyboard
- Each letter should come beneath the other
- Concentrate your mind on the text
- Typing should be done quite accurately with constant rhythm
- Repeat this process until mastery over this exercise



Let's Practice 2

B. Type the following in double line spacing to get perfection over the Home Row.

asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh
 asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh
 asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh
 asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh
 asdfg;lkjh asdfg;lkjh asdfg;lkjh asdfg;lkjh fads lall
 dask sad slak flask fads lall dask sad slak flask
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 flask fads lall dask sad slak flask fads lall dask sad
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 sad slak flask

Instructions

- Do not look at the keyboard
- Each letter should come beneath the other
- Concentrate your mind on the text
- Typing should be done quite accurately with constant rhythm
- Repeat this process until mastery over this exercise

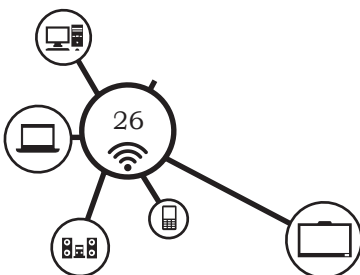
Undertake repeated practices of typewriting the character on the Home Row without looking at the keyboard.

Allocation of keys to fingers on the third row (upper row)

The next step is learning the key-reaches from the Home Row to the row above it. The learning begins with the reaches from 'a' to 'q' by left hand little finger and from ';' to 'p' by right hand little finger. This is followed by the placement of the third fingers (Ring fingers) to the adjoining keys 'w' and 'o' and so on (Figure 2.10). In the third row, the allotment of fingers is explained below.

LF	RF	MF	IF	IF	IF	IF	MF	RF	LF
Q	W	E	R	T	Y	U	I	O	P

Fig: 2.10: Allocation of fingers on the third row



While typing on the upper row, keep fingers on home row. Lift fingers of left hand and strike upper row key one by one and type

q w e r t (r and t are typed by the same finger)

Now, again lift the fingers of right hand and strike upper row keys one after another and type

p o i u y (u and y are typed by the same finger)

You should ensure that one finger should move at a time, while other fingers should remain on the home row.

Allocation of keys to fingers on the first row (bottom row)

After learning how to operate keys on Home Row and Third Row, the next step is to learn how to operate keys on the First Row. Keys Z, X, C, V, B, N, M, Comma, Full Stop and '/' sign are located on this row.

Let's Practice 3

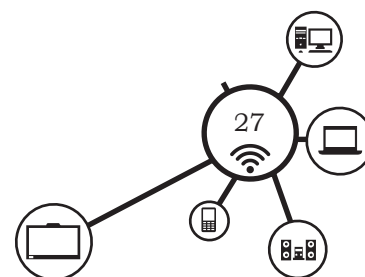
A. Type the following words and sentences in double line spacing to practice the Upper Row of the keyboard.

*qwerty poiuy qwerty poiuy qwerty poiuy qwerty poiuy qwerty poiuy
qwerty poiuy qwerty poiuy post quite type quaypoleripehope
wait role what show flow goal wool post quite type quay
pole ripe hope wait role what show flow goal wool self help
is the order of the day. Self helpis the order of the day the
writer was happy, the writer was happy.*

In the earlier two rows, all the eight fingers of both the hands were used to operate the keys. But while typewriting on the First Row, little finger of left hand is not used, i.e., no key is assigned to it. So, from the Home Row, turn downwards the Ring Finger of left hand and strike key 'z'. Similarly, type keys 'x' and 'c' with middle and forefinger, respectively. Type full stop, comma, m, n with little, Ring, Middle and forefinger of right hand, respectively, which will appear as given below.

z x c . , m n

Alphabets 'v' and 'b' are to be typed with forefinger of left and right hand, respectively.



Allocation of keys on bottom row is depicted below:

LF	RF	MF	IF	IF
-	Z	X	C	V
IF	IF	MF	RF	LF
B	N	M	,(Comma)	.(Fullstop)

Let's Practice 4

A. Type the following words in double line spacing to practice the Bottom Row of the keyboard.

*gameroxytimetaximindcampjumplazy,size;zeal,haze,zone;zinc.
Gameroxytimetaximindcampjumplazy,size;zeal,haze,zone;zinc.
on,no,man,can,child,chalk,number,member,remember,general
on,no,man,can,child,chalk,number,member,remember,general*

Allocation of keys to fingers on the Fourth Row (Number Row)

In this row, type 1, 2, 3 with little, ring and middle fingers of the left hand, respectively, and 4 and 5 with the index finger (forefinger). Similarly type 0, 9, 8 with little, ring and middle fingers of right hand, respectively, 7 and 6 with index finger (forefingers).

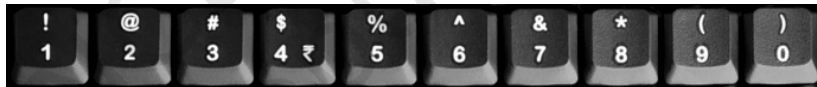
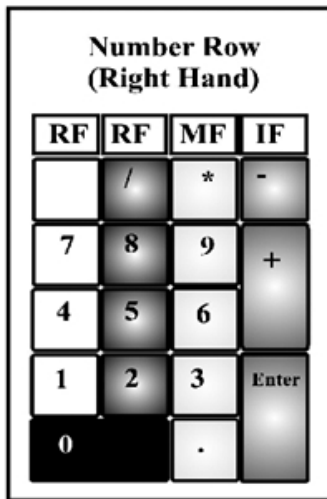


Fig. 2.11 Numeric Keypad on keyboard

LF	RF	MF	IF	IF
1	2	3	4	5
IF	IF	MF	RF	LF
6	7	8	9	0

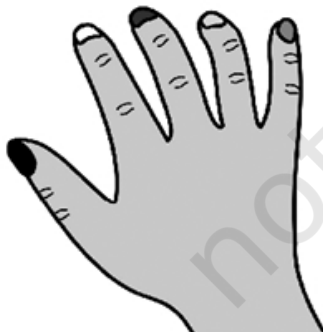
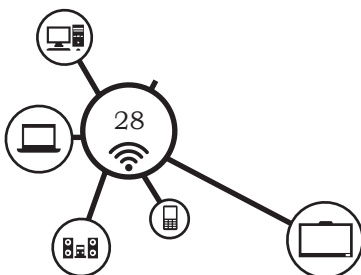


Fig. 2.12: Positioning of fingers on the number row

Using numeric keypad

Efficient and effective use of numeric keypad is important in numeric data entry. The numeric keypad has four columns and five rows. The row which has 4, 5, 6 and + is called Home Row. This is the row which is initially practiced by a touch typist. The allocation of keys on this row is as shown in Figure 2.12.

On a numeric keypad, the number 5 is the guide key. It has a small raised tangible mark which serves as a guide for the touch typist in the placement of fingers on other keys.



Allocation of rest of the keys on numeric keypad '0' is to be pressed by the right-hand thumb. One can also make use of calculator keyboard for numeric keypad practice.

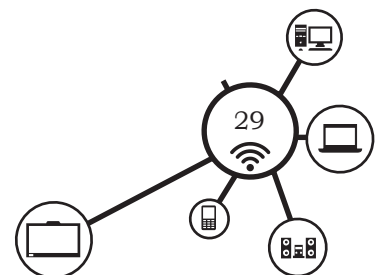
Successful keyboarding tips

The following points may be kept in mind for successful keyboarding techniques.

- Press the keys with feather touch and do not put undue pressure.
- Rest your fingers on Home row while typing.
- Allow your fingers to fall naturally on the keys so that each rests on top of the next key along the same horizontal row.
- While typing, release the key immediately as soon as you press it. Holding the key for long time, will repeatedly type the same character.
- Do not look at the keyboard while practicing.
- Press the keys with equal intervals of time in rhythm.
- Press the keys only with the fingers allotted for them.
- While pressing a key, say slowly pronounce the character on the key.
- Do not take any mental stress while typing.
- Secure typing ergonomics.
- Maintain patience if committed mistake at initial stage.
- Maintain a balance between speed and accuracy, as both are equally important. Do not sacrifice accuracy for speed.
- To gain mastery of computer keyboard, undertake repeated practice of typewriting words, sentences, passages and figures without looking at the keyboard.

Check your typing ergonomics

- Do you sit in the correct posture while working on computers? Yes/No
- Is your desk and chair ergonomic, and if not, have you adjusted them? Yes/No



NOTES

- Are your computer table, mouse, keyboard placed in correct position? Yes/No
- Is your computer/laptop correctly placed on your desk? Yes/ No
- Have you arranged your tools on your desk to prevent twisting and reaching? Yes/No

Using typing software

There are many software available which are free of cost and are customised to learn typing efficiently and effectively.

Introduction to Rapid Typing Tutor

Rapid Typing Tutor is a Free and Open Source Software (FOSS) designed to learn typing skills on the computer. It is free to use and share with others for free, but only by using the original distribution package. Learning to type is fun with the typing game included with Rapid Typing Tutor.

Touch typing technique

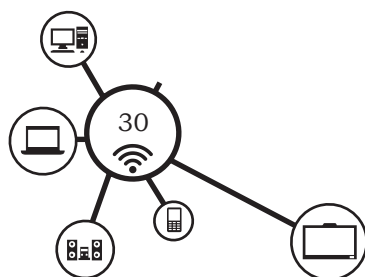
Touch typing improves typing speed and accuracy. A touch typist never looks at the keyboard. The fingers hit the right keys by habit. The typist is entirely focused on the text being typed, reading the words and phrases as the fingers type the text reflexively. Touch typing can be learned by performing special exercises.

Stage one of the process begins with learning the Home Row of the keyboard (the row beginning with the Caps Lock key). Looking at the keyboard is strictly forbidden. This is followed by learning the lower and upper rows, the numbers row, uppercase letters and special symbols.

Stage two involves memorising frequently used syllables and typing words containing these syllables.

Stage three involves typing actual text to perfect the skills acquired.

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Touch typing rules



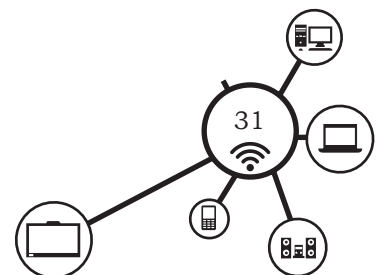
Fig 2.13: Keyboard layout for learning typing

- The F, D, S, A, and J, K, L, ; keys (on a QWERTY keyboard) represent the base position. Keyboards usually have small protrusions on the F and J keys. They help your fingers locate the base position without looking at the keyboard. Try to return your fingers to the base position after each keystroke.
- Colour coding shows which finger should press each key (see the picture above). The left index finger is reserved for all the red keys. The right index finger is reserved for green keys, and so forth. Use the thumb of whichever hand is more convenient for you to press the Space key.
- The base position on the numeric pad is the number 5 key for the middle finger, 4 for the index finger, and 6 for the ring finger. The numeric pad simplifies and speeds up numerical data input.
- Uppercase letters and symbols appearing on keys in the numbers row are typed by one hand with the little finger of the other hand holding down the SHIFT key.
- Do not look at the keyboard. Try to locate the right key with your fingers.

After configuring settings in Wizard, Rapid Typing's main window will appear as shown in Figure 2.14.

Let us familiarise with the **Typing Tutor** interface. The window is composed of the following controls:

Taskbar allows to set or change some basic options to start a lesson (keyboard layout, level, lesson, and background).



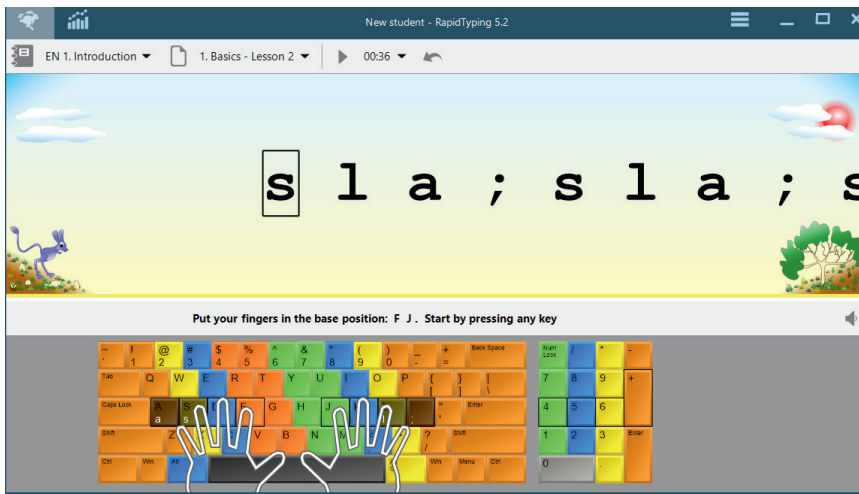


Fig 2.14: Rapid Typing's main window

Three horizontal buttons in the top-right corner (Options, About and Help) can display the corresponding dialogs.

Three vertical buttons in the top-left corner (Lesson, Statistics and Lesson Editor) are used for switching between current lesson, User Statistics and Lesson Editor.

Text panel is the area where the text to be typed is displayed. You can easily edit it in Lesson Editor, if necessary.

Lesson control panel includes several controls to pause/resume the current lesson, enable/disable sounds, and adjust the sound volume.

Keyboard is the virtual keyboard that will help you to learn touch typing with all 10 fingers. You can customise its appearance in the 'Lesson' section.

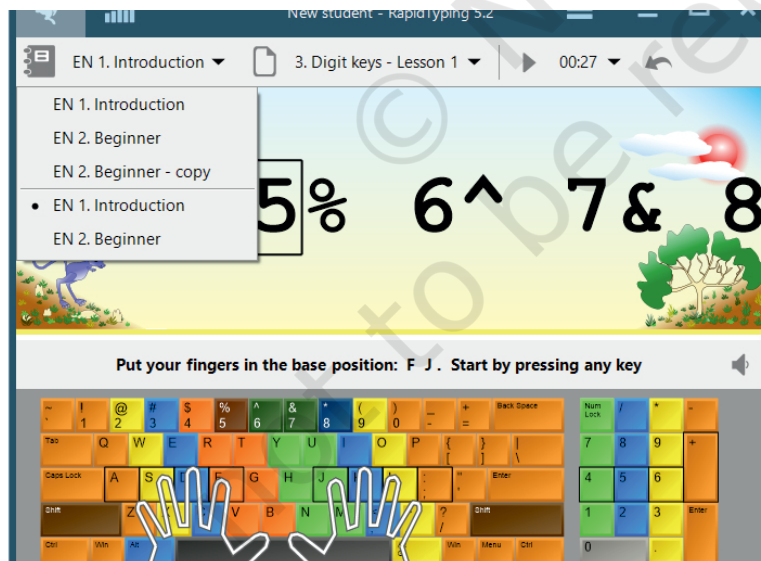


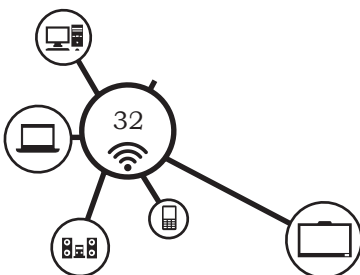
Fig 2.15: Beginning or Introduction to Rapid Typing tutor

Begin lessons

To start your first lesson in **Typing Tutor**, select the keyboard layout, level and lesson category on the Taskbar shown below.

There are four drop-down lists in the top-left corner of the screen. Therefore, moving from left to right, the procedure will be as follows:

- Choose the layout (i.e., the language of keyboard); it's "EN" on the picture above.
- Then, select a level (there are three levels available— Introduction, Beginner); it's "Beginner" on the picture above.



- Specify lesson category (depending on the level chosen, the available categories may vary).
- Finally, choose the lesson that you would like to study.
- When everything is ready, press any key, then put your fingers in the initial position shown on the keyboard and start typing the text.

There is also the Lesson Control Panel just above the Keyboard from where you can suspend/resume the current lesson or adjust the sound effects:

- To start/resume a lesson, click the ► button just above the top-left corner of the keyboard.
- To pause a lesson, click the || button that is displayed instead of the ► button.
- To restart the current lesson, click the ↺ button, which is the far right button on the Taskbar.
- To enable/disable sounds in the current lesson, click the 🔊 button located above the top-right corner of the keyboard and set the sounds volume using the vertical slider.

Notes

- You can also set the background image for the Text Panel by choosing an option (**Animation**, **Wallpaper** or **Plain**) from the dropdown list on the Taskbar in top-right corner of the window.

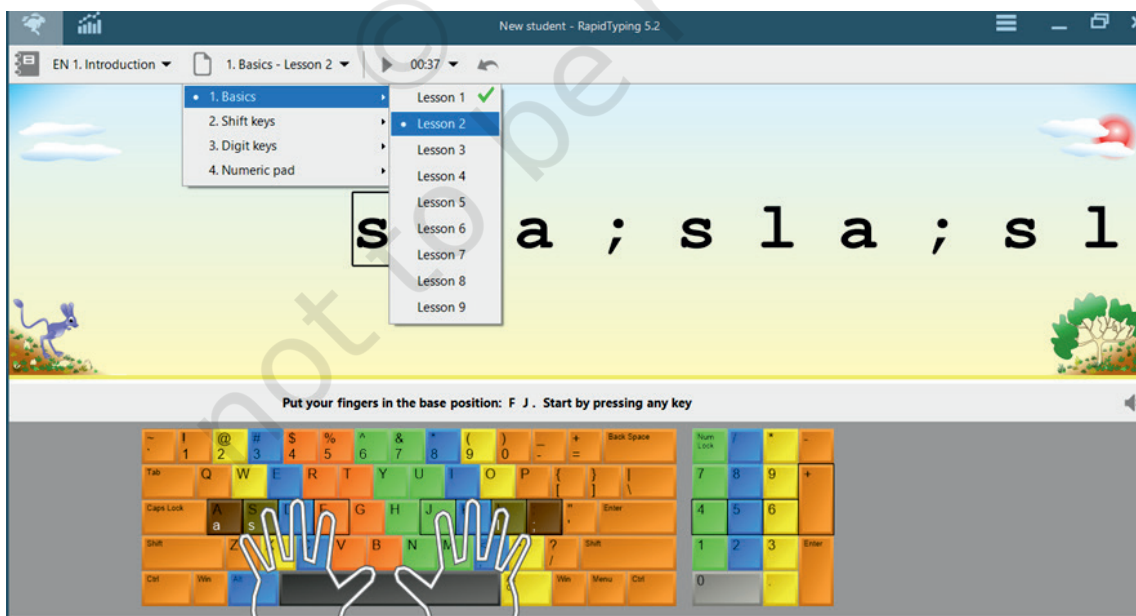
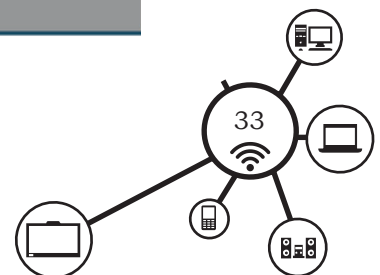


Fig 2.16 Selecting a Lesson



- While making your way through the lessons, you will probably mention two progress bars (one in green and another in yellow) on the Lesson Control Panel.
- The green progress bar (upper) shows the percentage of completion for the current lesson, and the yellow progress bar (lower) reflects the acceptable time period for typing a single character.
- When the yellow progress bar runs out at least once, **Typing Tutor** records that you have broken the rhythm at this character.

How to interpret your results

Each time you complete a lesson, the Results dialog window displays your achievements in this lesson.

The Results dialog window consists of two tabs called Rating and Errors. The first one looks like shown in figure 2.17

You can review your metrics: overall skill level between *Beginner* and *Champion* (upper slider indicator) as well as words per minute, characters per minute and accuracy in per cent (three remaining sliders below). In the text area, you can check your mistakes that occurred during the lesson.

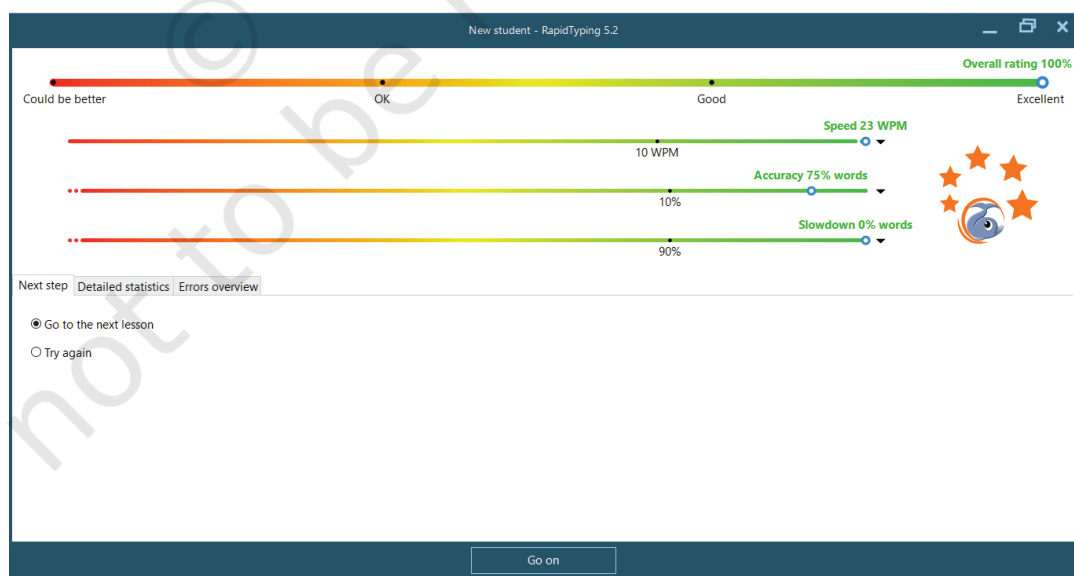
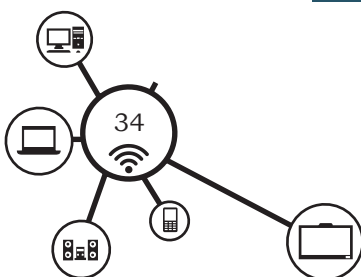


Fig 2.17: Results dialog window for your achievements



The colour indication is as follows:

- **Green** letters denote right inputs.
- **Yellow** letters stand for right inputs exceeding the acceptable timeframe.
- **Red** letters denote wrong inputs within the acceptable timeframe.
- **Orange** letters indicate wrong inputs that also exceed the acceptable timeframe (it's the worst result).

Error window

On the Error tab you can view your detailed statistics for the current lesson. This tab shows your errors and delays percentage both in the graphical and table view. This will help you to better understand which letters are still hard for you to type. You can switch between the Errors in percent chart (by clicking the button just below the tabs) and Delay in percent chart (by clicking the button).

On the bar chart, the X-axis corresponds to the letters used in the lesson, while the Y-axis shows the errors or delays related to each letter. If there aren't any errors and delays for a certain character, it won't show up on the chart.

Note

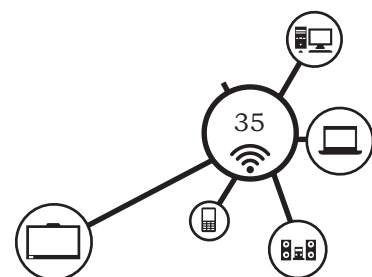
When you select a row in the table, the corresponding bar on the chart will be highlighted. When you select a column in the table, the chart will show either errors or delays.

Then, you can click the Next button below to proceed to the next lesson, Repeat to go through this lesson once again, or Records to check whether your results are great enough for **Typing Tutor's** Hall of Fame.

To view the results of all the lessons that you've already completed (not only the current one), go to the Statistics section.

View and analyse statistics

To view the results of all the lessons that you have already completed: (i) Open the Statistics section, and (ii) choose the button in the top-left corner of the main window. The Statistics screen will open as shown in Figure 2.18.



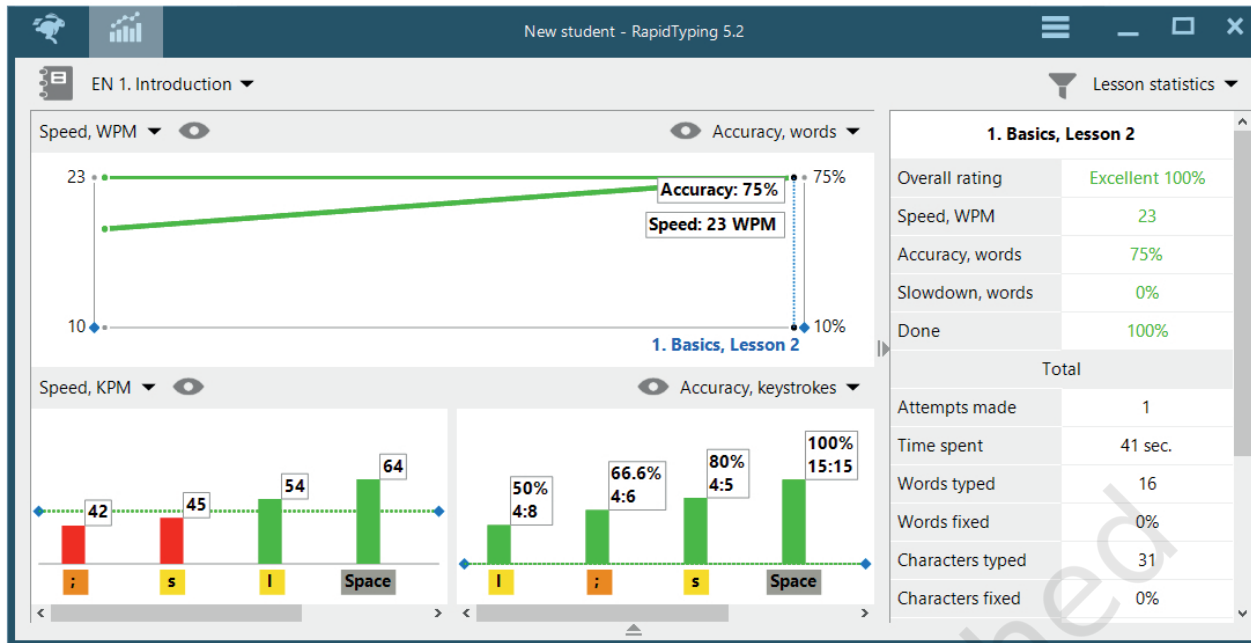


Fig 2.18: Overall statistics and progress of your typing

Here, you can review your overall statistics and progress both in graphical and table view. The following options are available:

- Click the button in the top-left corner of the window (or press Ctrl+1 on your keyboard) to see your CPM speed (characters per minute) progress.
- Click the button (or press Ctrl+2 on your keyboard) to see your WPM speed (words per minute) progress.
- Click the button (or press Ctrl+3 on your keyboard) to see how your typing accuracy changes in the different lessons.



Fig 2.19: Statistics for a particular lesson

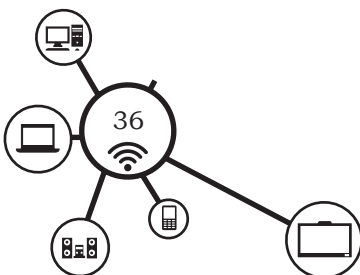




Fig 2.20: Overall rating

- To remove a metric from your statistics, select a lesson in the right table and click the button (or press Delete on your keyboard).
- On the Taskbar in the upper part of the window, you can choose keyboard layout, level and course for which you'd like to see statistics.
- You can also switch between the Lesson Group (that is, statistics by lessons) and Day Group (statistics by days) options in the far right drop-down on the Taskbar.

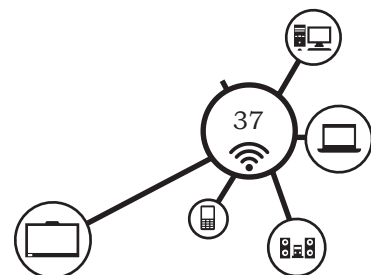
Detailed lesson statistics

To review the statistics for a particular lesson, choose this lesson in the right table and click the Lesson tab in the top-right corner. The Lesson tab contains the same data that are displayed upon completion of every lesson. For details, see How to Interpret Your Results section.

Working with lesson editor

To open Lesson Editor, click the button in the top-left corner of the Rapid Typing window. Lesson Editor window is composed of the following controls:

- Taskbar which allows to select the keyboard layout and level of the lesson to edit.
- Toolbar which includes Basic_lesson1 or lesson 2....., for inserting text.



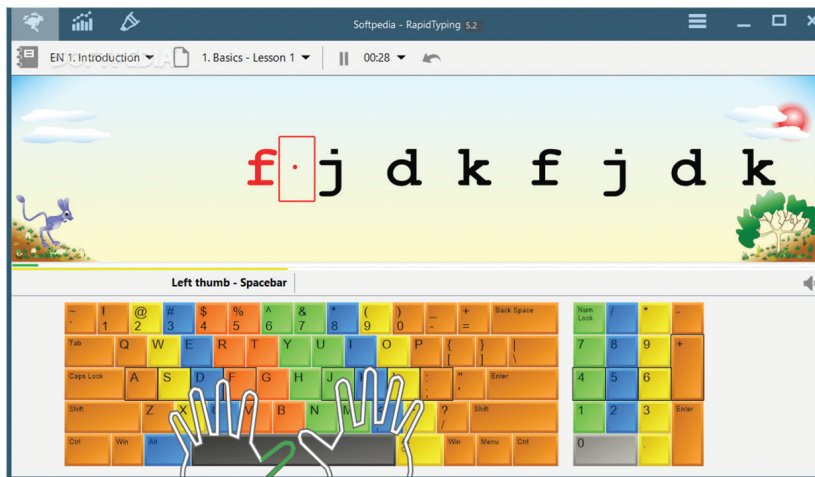


Fig 2.21: Typing using the basic keys

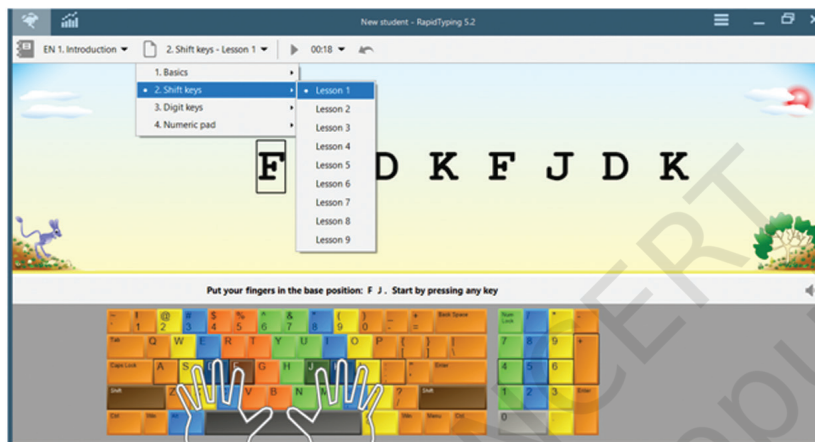


Fig 2.22 Type using Shift key

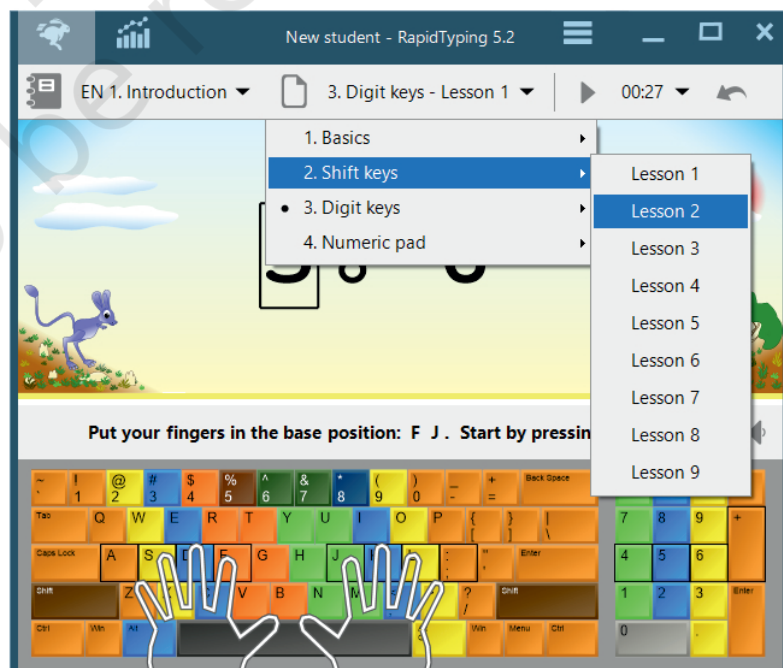
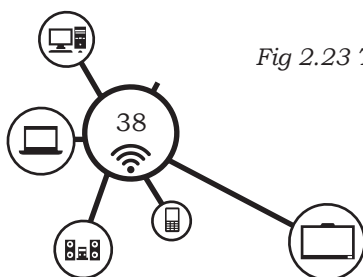


Fig 2.23 Type using Digit key

- Navigation Tree which shows the existing courses and lesson hierarchy.
- Text Panel, an area where you can edit the text of the lesson currently selected in the Navigation Tree.
- Lesson Metrics which displays the number and percentage of words, characters, spaces and specific characters in the lesson.
- Keyboard, which is the virtual keyboard that highlights the characters used in the currently selected lesson. You can customise its appearance in the 'Lesson' section.



Lesson Editor makes all the lessons fully customisable. You can add, insert, change, and delete lessons, group them in courses, and review the corresponding metrics. You can type using the basic keys, such as Shift keys, Digit keys and Numerical pad.

Calculating the typing speed

The typing speed can be measured with different accuracies, such as

- How many words are typed for a certain time period (the least accurate)?
- How many characters are typed for a certain time period?
- How many keystrokes are made for a certain time period (the most accurate)?

Also there are

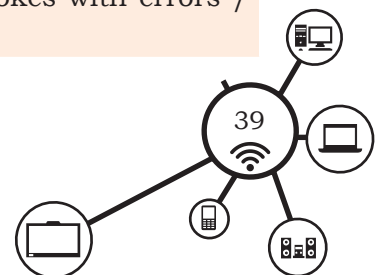
- Simple speed (Gross speed)
- Net speed (takes into account the errors)

The following table lists the detailed descriptions of typing speed types.

Types	Description	Formula
WPM	the number of words typed in a one minute period of time	$WPM = (\text{Words without errors} + \text{Words with errors}) / \text{Time spent in minutes}$
Net WPM	the WPM without words with errors	$\text{Net WPM} = WPM - (\text{Words with errors} / \text{Time spent in minutes})$
CPM	the number of characters typed in a one minute period of time	$CPM = (\text{Characters without errors} + \text{Characters with errors}) / \text{Time spent in minutes}$
Net CPM	the CPM without characters with errors	$\text{Net CPM} = CPM - (\text{Characters with errors} / \text{Time spent in minutes})$
KPM	the number of keystrokes in a one minute period of time	$KPM = (\text{Keystrokes without errors} + \text{Keystrokes with errors}) / \text{Time spent in minutes}$
Net KPM	the KPM without keystrokes with errors	$\text{Net KPM} = KPM - (\text{Keystrokes with errors} / \text{Time spent in minutes})$



Fig 2.24 Type using the Numeric Keypad



A student typed 240 characters per 2 min with errors in 20 characters.

Simple speed = 240 characters / 2 min = 120 cpm

Net speed = 120 cpm - (20 errors / 2 min) = 100 net cpm

Typing accuracy

Typing accuracy is defined as the percentage of correct entries out of the total entries typed. The following table lists the different formulas for the typing accuracy calculation.

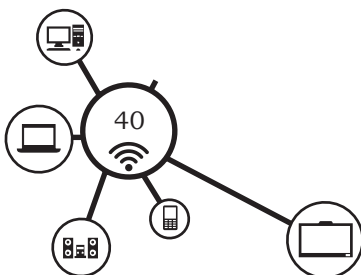
Description	Formula
Accuracy in the words, percent	Accuracy = (100% - Words with errors * 100%) / Total number of words
Accuracy in the characters, percent	Accuracy = (100% - Characters with errors * 100%) / Total number of characters
Accuracy in the keystrokes, percent	Accuracy = (100% - Incorrect keystrokes * 100%) / Total number of words

Sometimes it's convenient to evaluate the typing accuracy in the Errors (percentage errors). See table below—

Typing rhythm

Description	Formula
Errors in the words, percent	Errors % = Words with errors * 100% / Total number of words
Errors in the characters, percent	Errors % = Errors = Characters with errors * 100% / Total number of characters
Errors in the keystrokes, percent	Errors % = Incorrect keystrokes * 100% / Total number of keystrokes

In the touch typing techniques the typing rhythm is very important. Typing rhythm means the keystrokes



should come at equal intervals. To control the constant typing speed, the Slowdown indicator is used. The following table shows the different formula for the Slowdown (percentage slowdowns) calculation:

Description	Formula
Slowdown in the words, percent	Slowdown % = Words with delay * 100% / Total number of words
Slowdown in the characters, percent	Slowdown % = Characters with delay * 100% / Total number of characters
Slowdown % in the keystrokes, percent	Slowdown % = Keystroke delay * 100% / Total number of keystrokes

Overall rating calculation

Overall rating (%) = (Net speed / Course goal: Speed) *100% where:

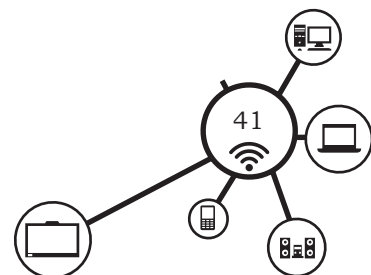
- Net speed is Net WPM, Net CPM or Net KPM, the value depends on the current options
- Course goal: Speed is customised in the options for each course

(a) Good typing speed

An average professional typist types usually in speeds of 50 to 80 wpm, while some positions can require 80 to 95 and some advanced typists work at speeds above 120 wpm.

The fastest typing speed on an alphanumeric keyboard, 216 words in one minute, was achieved by Stella Pajunas in 1946.

As of 2005, writer Barbara Blackburn was the fastest alphanumeric English language typist in the world, according to *The Guinness Book of World Records*. Using the Dvorak Simplified Keyboard, she maintained 150 wpm for 50 minutes, and 170 wpm for shorter periods. Her top speed was 212 wpm.



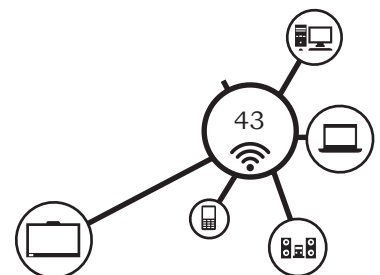
3. Which of the following operation is not performed by a mouse?
 - (a) Left Click
 - (b) Right Click
 - (c) Middle Click
 - (d) Double Click
4. In the Rapid typing tutor, which of the following is not true?
 - (a) Green letters denote right inputs.
 - (b) Yellow letters stand for right inputs in extra time.
 - (c) Red letters denote wrong inputs within time.
 - (d) Orange letters indicate wrong inputs with in time.
5. The lesson control panel can be used for_____.
 - (a) animation
 - (b) enable or disable sounds
 - (c) plain
 - (d) background

B. Fill in the blanks

1. A touch typist knows the location on the keyboard through _____memory.
2. The typing speed is measured in _____.
3. Alphabets (A-Z) and numbers (0-9) are known as _____keys.
4. Del key deletes the character at the _____ cursor position.
5. A standard keyboard has _____Function keys.
6. Numeric keypad is used to enter _____ data.
7. Page Up key is used to shift the _____ one page up.
8. Pressing the End key moves the cursor to the _____character of the line.
9. On numeric keypad '0' is to be pressed by the _____thumb.
10. The numeric keypad has _____ columns and _____ rows.

C. State whether the statements given below are True or False.

1. The Alt key is always used with the other key.
2. There are 5 arrow keys on the keyboard.



3. The Backspace key is used to delete the character on the right to the cursor.
4. Caps lock key is a toggle key.
5. The control key is used in conjunction with other keys.
6. Enter key is also known as Return key.
7. The function keys have different meaning in different software.
8. The keys 'F' and 'J' are known as guide keys.
9. There are two Caps Lock keys on the keyboard.
10. The mouse has two scroll buttons.
11. PageDown key is used to move the cursor on next page.
12. Pressing the Home Key, moves the cursor to the first character in the document.
13. On a numeric keypad, the number 8 is the guide key.
14. In Rapid typing tutor, the right input entered is denoted by yellow color.
15. In Rapid typing tutor, the right input entered in exceeding time frame is denoted by Red colour.

D. Short answer questions (50 words)

1. Discuss the various types of keys available on a computer keyboard.
2. Differentiate between Home Keys and Guide Keys.
3. What do you understand by Guide Keys? Name the Guide keys of a
 - (a) computer keyboard
 - (b) typewriter
4. Explain the role of typing ergonomics.
5. Why the use of various typing software is common now-a-days?
6. Mention the finger allocation of keys of the Bottom Row of computer keyboard.

