

Unit 1: Problem solving with computers

1. What do you mean by Problem Solving? Explain how c-language is used to solve problems?
2. What is an algorithm? What are the similarities between algorithm and flowchart?
3. Explain history of C language briefly.
4. Explain the structure of C-program with an example.
5. Write an algorithm and draw a flowchart to determine whether the number is positive, negative, zero, odd, even or prime number.
6. Write an algorithm and draw a flowchart to find the real roots of quadratic equation $ax^2+bx+c=0$.

Unit 2: Elements of C-language

1. What are keywords? Give any 10 examples of keywords.
2. Define identifier. Explain the rules for defining valid identifiers.
3. What do you mean by escape sequence? Give example.
4. Explain delimiters with examples.
5. What are data types? Explain different data types with their characteristics?
6. Explain preprocessor directives, symbolic constant with example.
7. What do you mean by variable? Explain variable declaration with proper syntax.
8. What is constant? Explain different constants used in c-language.
9. Write a program to find the area of a triangle when base and height are given.
10. Write a program to find the area of a circle using define macros.
11. Write a program to find the real roots of a quadratic equation.
12. Write a program to find the semi-perimeter and area of triangle when three sides are given.
13. Write a program to find the area between two concentric circles.
14. Write a program to find the area and volume of a sphere.
15. Write a program to find the square root and square of any integer using math.h headerfile.

Unit 3: Input and Output

1. Differentiate between formatted and unformatted I/O functions.
2. What are the commonly used I/O (scanf and printf) functions in C? Write general form of each.
3. What is the difference between getch() and getche() functions? Explain with an example.
4. Explain the program using getchar() and putchar() functions?
5. Explain why getchar(), putchar(), getch(), getche(), putch(), etc are called unformatted functions.
6. Write a program to read data char, int, float, double, long, double from the keyboard and display it on screen using suitable functions.

Unit 4: Operators and Expressions

1. What do you mean by operators? Explain arithmetic operators.
2. Explain unary operator, binary operator and ternary operator with example.
3. What are the types of C operators? Compare unary and binary operators.
4. What is pre-increment and post-increment? Explain with example.
5. What do you mean by logical operators? Explain.
6. How relational operators differ from logical operators?
7. Explain logical and bitwise logical operators with example.
8. What do you mean by ternary operator? Explain with example.
9. What is type conversion? Explain implicit and explicit type conversion.
10. Define operator precedence and associativity with example.
11. What do you mean by bitwise shift operator? Explain left shift and right shift operators with example.
12. What is automatic type conversion? List the automatic type conversion rule in C.
13. Find the value of the following expressions:

int a=8,b=5;

float x=0.005, y=0.01;

i. $2*((a/5)+(4*(b-3))\%(a+b-2));$

ii. $(x<y)&\&(a>0)/(b<4);$

iii. $(a>b)?a:b;$



Windows & Linux keymap

 jetbrains.com/idea  [@intellijidea](https://twitter.com/intellijidea)  blog.jetbrains.com/idea

REMEMBER THESE SHORTCUTS

Smart code completion	Ctrl + Shift + Space
Search everywhere	Double Shift
Show intention actions and quick-fixes	Alt + Enter
Generate code	Alt + Ins
Parameter info	Ctrl + P
Extend selection	Ctrl + W
Shrink selection	Ctrl + Shift + W
Recent files popup	Ctrl + E
Rename	Shift + F6

GENERAL

Open corresponding tool window	Alt + #[0-9]
Save all	Ctrl + S
Synchronize	Ctrl + Alt + Y
Toggle maximizing editor	Ctrl + Shift + F12
Inspect current file with current profile	Alt + Shift + I
Quick switch current scheme	Ctrl + BackQuote (`)
Open Settings dialog	Ctrl + Alt + S
Open Project Structure dialog	Ctrl + Alt + Shift + S
Find Action	Ctrl + Shift + A

DEBUGGING

Step over / into	F8 / F7
Smart step into / Step out	Shift + F7 / Shift + F8
Run to cursor	Alt + F9
Evaluate expression	Alt + F8
Resume program	F9
Toggle breakpoint	Ctrl + F8
View breakpoints	Ctrl + Shift + F8

SEARCH / REPLACE

Search everywhere	Double Shift
Find	Ctrl + F
Find next / previous	F3 / Shift + F3
Replace	Ctrl + R
Find in path	Ctrl + Shift + F
Replace in path	Ctrl + Shift + R
Select next occurrence	Alt + J
Select all occurrences	Ctrl + Alt + Shift + J
Unselect occurrence	Alt + Shift + J

EDITING

Basic code completion	Ctrl + Space
Smart code completion	Ctrl + Shift + Space
Complete statement	Ctrl + Shift + Enter
Parameter info	Ctrl + P
Quick documentation lookup	Ctrl + Q
External Doc	Shift + F1
Brief Info	Ctrl + mouse
Show descriptions of error at caret	Ctrl + F1
Generate code...	Alt + Insert
Override methods	Ctrl + O
Implement methods	Ctrl + I
Surround with...	Ctrl + Alt + T
Comment / uncomment with line comment	Ctrl + /
Comment / uncomment with block comment	Ctrl + Shift + /
Extend selection	Ctrl + W
Shrink selection	Ctrl + Shift + W
Context info	Alt + Q
Show intention actions and quick-fixes	Alt + Enter
Reformat code	Ctrl + Alt + L
Optimize imports	Ctrl + Alt + O
Auto-indent line(s)	Ctrl + Alt + I
Indent / unindent selected lines	Tab / Shift + Tab
Cut current line to clipboard	Ctrl + X, Shift + Delete
Copy current line to clipboard	Ctrl + C, Ctrl + Insert
Paste from clipboard	Ctrl + V, Shift + Insert
Paste from recent buffers...	Ctrl + Shift + V
Duplicate current line	Ctrl + D
Delete line at caret	Ctrl + Y
Smart line join	Ctrl + Shift + J
Smart line split	Ctrl + Enter
Start new line	Shift + Enter
Toggle case for word at caret or selected block	Ctrl + Shift + U
Select till code block end / start	Ctrl + Shift +] / [
Delete to word end	Ctrl + Delete
Delete to word start	Ctrl + Backspace
Expand / collapse code block	Ctrl + NumPad+ / -
Expand all	Ctrl + Shift + NumPad+
Collapse all	Ctrl + Shift + NumPad-
Close active editor tab	Ctrl + F4

REFACTORING

Copy	F5
Move	F6
Safe Delete	Alt + Delete
Rename	Shift + F6
Refactor this	Ctrl + Alt + Shift + T
Change Signature	Ctrl + F6
Inline	Ctrl + Alt + N
Extract Method	Ctrl + Alt + M
Extract Variable	Ctrl + Alt + V
Extract Field	Ctrl + Alt + F
Extract Constant	Ctrl + Alt + C
Extract Parameter	Ctrl + Alt + P

NAVIGATION

Go to class	Ctrl + N
Go to file	Ctrl + Shift + N
Go to symbol	Ctrl + Alt + Shift + N
Go to next / previous editor tab	Alt + Right / Left
Go back to previous tool window	F12
Go to editor (from tool window)	Esc
Hide active or last active window	Shift + Esc
Go to line	Ctrl + G
Recent files popup	Ctrl + E
Recent locations popup	Ctrl + Shift + E
Navigate back / forward	Ctrl + Alt + Left / Right
Navigate to last edit location	Ctrl + Shift + Backspace
Select current file or symbol in any view	Alt + F1
Go to declaration	Ctrl + B, Ctrl + Click
Go to implementation(s)	Ctrl + Alt + B
Open quick definition lookup	Ctrl + Shift + I
Go to type declaration	Ctrl + Shift + B
Go to super-method / super-class	Ctrl + U
Go to previous / next method	Alt + Up / Down
Move to code block end / start	Ctrl +] / [
File structure popup	Ctrl + F12
Type hierarchy	Ctrl + H
Method hierarchy	Ctrl + Shift + H
Call hierarchy	Ctrl + Alt + H
Next / Previous highlighted error	F2 / Shift + F2
Edit source / View source	F4 / Ctrl + Enter
Show navigation bar	Alt + Home
Toggle bookmark	F11
Toggle bookmark with mnemonic	Ctrl + F11
Go to numbered bookmark	Ctrl + #[0-9]
Show bookmarks	Shift + F11

COMPILE AND RUN

Build project	Ctrl + F9
Compile selected file, package or module	Ctrl + Shift + F9
Select configuration and run / debug	Alt + Shift + F10 / F9
Run / Debug	Shift + F10 / F9
Run context configuration from editor	Ctrl + Shift + F10
Run anything	Double Ctrl

USAGE SEARCH

Find usages / Find usages in file	Alt + F7 / Ctrl + F7
Highlight usages in file	Ctrl + Shift + F7
Show usages	Ctrl + Alt + F7

VCS / LOCAL HISTORY

Commit project to VCS	Ctrl + K
Update project from VCS	Ctrl + T
Push commits	Ctrl + Shift + K
'VCS' quick popup	Alt + BackQuote (`)

LIVE TEMPLATES

Surround with Live Template	Ctrl + Alt + J
Insert Live Template	Ctrl + J



Default macOS keymap



REMEMBER THESE SHORTCUTS

Smart code completion	⇧ Space
Search everywhere	Double ⇧
Show intention actions and quick-fixes	⌘ ↵
Generate code	⌘ N, ⇧ ↵
Parameter info	⌘ P
Extend selection	⌘ ↑
Shrink selection	⌘ ↓
Recent files popup	⌘ E
Rename	⇧ F6

GENERAL

Open corresponding tool window	⌘ O...⌘ 9
Save all	⌘ S
Synchronize	⌘ Y
Toggle maximizing editor	⌘ ⇧ F12
Inspect current file with current profile	⌘ ⇧ I
Quick switch current scheme	⌘ `
Open Settings dialog	⌘ ,
Open Project Structure dialog	⌘ ;
Find Action	⌘ ⇧ A

DEBUGGING

Step over/into	F8 / F7
Smart step into/Step out	⇧ F7 / ⇧ F8
Run to cursor	⌘ F9
Evaluate expression	⌘ F8
Resume program	⌘ ⌘ R
Toggle breakpoint	⌘ F8
View breakpoints	⌘ ⇧ F8

SEARCH / REPLACE

Search everywhere	Double ⇧
Find	⌘ F
Find next/previous	⌘ G / ⌘ ⇧ G
Replace	⌘ R
Find in path	⌘ ⇧ F
Replace in path	⌘ ⇧ R
Select next occurrence	⇧ G
Select all occurrences	⇧ ⌘ G
Unselect occurrence	⇧ G

EDITING

Basic code completion	⇧ Space
Smart code completion	⇧ ⇧ Space
Complete statement	⌘ ⇧ ↵
Parameter info	⌘ P
Quick documentation lookup	⌘ J, F1
External Doc	⇧ F1
Brief Info	⌘ + mouse
Show descriptions of error at caret	⌘ F1
Generate code...	⌘ N, ⇧ ↵
Override methods	⇧ O
Implement methods	⇧ I
Surround with...	⌘ ⌘ T
Comment/uncomment with line comment	⌘ /
Comment/uncomment with block comment	⌘ ⌘ ⌘ /
Extend selection	⌘ ↑
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Context info	⇧ ⇧ Q
Show intention actions and quick-fixes	⌘ ↵
Reformat code	⌘ ⌘ L
Optimize imports	⇧ ⌘ O
Auto-indent line(s)	⇧ ⌘ I
Indent/unindent selected lines	⇧ I / ⇧ ⇧ I
Cut current line to clipboard	⌘ X
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Toggle case for word at caret or selected block	⌘ ⇧ U
Select till code block end/start	⌘ ⌘ ⇧ [/ ⌘ ⌘ ⇧]
Delete to word end	⌘ ⌘
Delete to word start	⌘ ⌘
Expand/collapse code block	⌘ + / ⌘ -
Expand all	⌘ ⇧ +
Collapse all	⌘ ⇧ -
Close active editor tab	⌘ W

REFACTORING

Copy	F5
Move	F6
Safe Delete	⌘ Delete
Rename	⇧ F6
Refactor this	⇧ T
Change Signature	⌘ F6
Inline	⌘ ⌘ N
Extract Method	⌘ ⌘ M
Extract Variable	⌘ ⌘ V
Extract Field	⌘ ⌘ F
Extract Constant	⌘ ⌘ C
Extract Parameter	⌘ ⌘ P

NAVIGATION

Go to class	⌘ O
Go to file	⌘ ⇧ O
Go to symbol	⌘ ⌘ O
Go to next/previous editor tab	⇧ ⇧ / ⇧ ⇧ →
Go back to previous tool window	F12
Go to editor (from tool window)	⇧
Hide active or last active window	⇧ ⇧
Go to line	⌘ L
Recent files popup	⌘ E
Recent locations popup	⌘ ⇧ E
Navigate back/forward	⌘ ⌘ ⇧ / ⌘ ⌘ ⇧ →
Navigate to last edit location	⌘ ⇧ ⌘
Select current file or symbol in any view	⌘ F1
Go to declaration	⌘ B, ⌘ Click
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Recent files popup	Ctrl + E
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GENERAL

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Save all	Ctrl + S
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Toggle maximizing editor	Ctrl + Shift + F12
Inspect current file with current profile	Alt + Shift + I
Quick switch current scheme	Ctrl + BackQuote (`)
Open Settings dialog	Ctrl + Alt + S
Open Project Structure dialog	Ctrl + Alt + Shift + S
Find Action	Ctrl + Shift + A

DEBUGGING

Step over / into	F8 / F7
Smart step into / Step out	Shift + F7 / Shift + F8
Run to cursor	Alt + F9
Evaluate expression	Alt + F8
Resume program	F9
Toggle breakpoint	Ctrl + F8
View breakpoints	Ctrl + Shift + F8

SEARCH / REPLACE

Search everywhere	Double Shift
Find	Ctrl + F
Find next / previous	F3 / Shift + F3
Replace	Ctrl + R
Find in path	Ctrl + Shift + F
Replace in path	Ctrl + Shift + R
Select next occurrence	Alt + J
Select all occurrences	Ctrl + Alt + Shift + J
Unselect occurrence	Alt + Shift + J

EDITING

Basic code completion	Ctrl + Space
Smart code completion	Ctrl + Shift + Space
Complete statement	Ctrl + Shift + Enter
Parameter info	Ctrl + P
Quick documentation lookup	Ctrl + Q
External Doc	Shift + F1
Brief Info	Ctrl + mouse
Show descriptions of error at caret	Ctrl + F1
Generate code...	Alt + Insert
Override methods	Ctrl + O
Implement methods	Ctrl + I
Surround with...	Ctrl + Alt + T
Comment / uncomment with line comment	Ctrl + /
Comment / uncomment with block comment	Ctrl + Shift + /
Extend selection	Ctrl + W
Shrink selection	Ctrl + Shift + W
Context info	Alt + Q
Show intention actions and quick-fixes	Alt + Enter
Reformat code	Ctrl + Alt + L
Optimize imports	Ctrl + Alt + O
Auto-indent line(s)	Ctrl + Alt + I
Indent / unindent selected lines	Tab / Shift + Tab
Cut current line to clipboard	Ctrl + X, Shift + Delete
Copy current line to clipboard	Ctrl + C, Ctrl + Insert
Paste from clipboard	Ctrl + V, Shift + Insert
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Duplicate current line	Ctrl + D
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Smart line split	Ctrl + Enter
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Toggle case for word at caret or selected block	Ctrl + Shift + U
Select till code block end / start	Ctrl + Shift +] / [
Delete to word end	Ctrl + Delete
Delete to word start	Ctrl + Backspace
Expand / collapse code block	Ctrl + NumPad+ / -
Expand all	Ctrl + Shift + NumPad+
Collapse all	Ctrl + Shift + NumPad-
Close active editor tab	Ctrl + F4

REFACTORING

Copy	F5
Move	F6
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Refactor this	Ctrl + Alt + Shift + T
Change Signature	Ctrl + F6
Inline	Ctrl + Alt + N
Extract Method	Ctrl + Alt + M
Extract Variable	Ctrl + Alt + V
Extract Field	Ctrl + Alt + F
Extract Constant	Ctrl + Alt + C
Extract Parameter	Ctrl + Alt + P

NAVIGATION

Go to class	Ctrl + N
Go to file	Ctrl + Shift + N
Go to symbol	Ctrl + Alt + Shift + N
Go to next / previous editor tab	Alt + Right / Left
Go back to previous tool window	F12
Go to editor (from tool window)	Esc
Hide active or last active window	Shift + Esc
Go to line	Ctrl + G
Recent files popup	Ctrl + E
Recent locations popup	Ctrl + Shift + E
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COMPILE AND RUN

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EDITING

Basic code completion	⇧ Space
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Complete statement	⌘ ⇧ ↵
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Comment/uncomment with block comment	⌘ ⌘ ⌘ /
Extend selection	⌘ ↑
Shrink selection	⌘ ↓
Context info	⇧ ⇧ Q
Show intention actions and quick-fixes	⌘ ↵
Reformat code	⌘ ⌘ L
Optimize imports	⇧ ⌘ O
Auto-indent line(s)	⇧ ⌘ I
Indent/unindent selected lines	⇧ I / ⇧ ⇧ I
Cut current line to clipboard	⌘ X
Copy current line to clipboard	⌘ C
Paste from clipboard	⌘ V
Paste from recent buffers...	⌘ ⇧ V
Duplicate current line	⌘ D
Delete line at caret	⌘ ⌘
Smart line join	⇧ ⇧ J
Smart line split	⌘ ⇧
Start new line	⇧ ↵
Toggle case for word at caret or selected block	⌘ ⇧ U
Select till code block end/start	⌘ ⌘ ⇧ [/ ⌘ ⌘ ⇧]
Delete to word end	⌘ ⌘
Delete to word start	⌘ ⌘
Expand/collapse code block	⌘ + / ⌘ -
Expand all	⌘ ⇧ +
Collapse all	⌘ ⇧ -
Close active editor tab	⌘ W

REFACTORING

Copy	F5
Move	F6
Safe Delete	⌘ Delete
Rename	⇧ F6
Refactor this	⇧ T
Change Signature	⌘ F6
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Extract Method	⌘ ⌘ M
Extract Variable	⌘ ⌘ V
Extract Field	⌘ ⌘ F
Extract Constant	⌘ ⌘ C
Extract Parameter	⌘ ⌘ P

NAVIGATION

Go to class	⌘ O
Go to file	⌘ ⇧ O
Go to symbol	⌘ ⌘ O
Go to next/previous editor tab	⇧ ⇧ / ⇧ ⇧
Go back to previous tool window	F12
Go to editor (from tool window)	⇧
Hide active or last active window	⇧ ⇧
Go to line	⌘ L
Recent files popup	⌘ E
Recent locations popup	⌘ ⇧ E
Navigate back/forward	⌘ ⌘ ⇧ / ⌘ ⌘ ⇧
Navigate to last edit location	⌘ ⇧ ⌘
Select current file or symbol in any view	⌘ F1
Go to declaration	⌘ B, ⌘ Click
Go to implementation(s)	⌘ ⌘ B
Open quick definition lookup	⌘ Space, ⌘ Y
Go to type declaration	⇧ ⇧ B
Go to super-method / super-class	⌘ U
Go to previous/next method	⇧ ⇧ / ⇧ ⇧
Move to code block end/start	⌘ ⌘ [/ ⌘ ⌘]
File structure popup	⌘ F12
Type hierarchy	⇧ H
Method hierarchy	⌘ ⇧ H
Call hierarchy	⇧ ⌘ H
Next/Previous highlighted error	F2 / ⇧ F2
Edit source/View source	F4 / ⌘ ↓
Show navigation bar	⌘ Home
Toggle bookmark	F3
Toggle bookmark with mnemonic	⌘ F3
Go to numbered bookmark	⇧ O ...⇧ 9
Show bookmarks	⌘ F3

COMPILE AND RUN

Build project	⌘ F9
Compile selected file, package or module	⌘ ⇧ F9
Select configuration and run/debug	⇧ ⌘ R / D
Run/Debug	⇧ R / D
Run context configuration from editor	⇧ ⇧ R, ⇧ ⇧ D
Run anything	Double ⇧

USAGE SEARCH

Find usages/Find usages in file	⌘ F7 / ⌘ F7
Highlight usages in file	⌘ ⇧ F7
Show usages	⌘ ⌘ F7

VCS / LOCAL HISTORY

Commit project to VCS	⌘ K
Update project from VCS	⌘ T
Push commits	⌘ ⇧ K
'VCS' quick popup	⇧ V

LIVE TEMPLATES

Surround with Live Template	⌘ ⌘ J
Insert Live Template	⌘ J