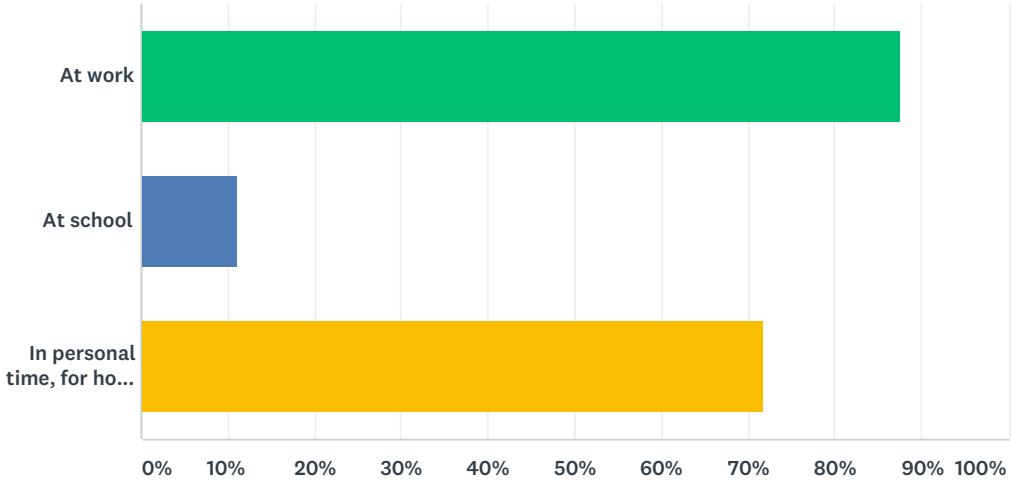
Q1 Where do you use C++? (select all that apply)

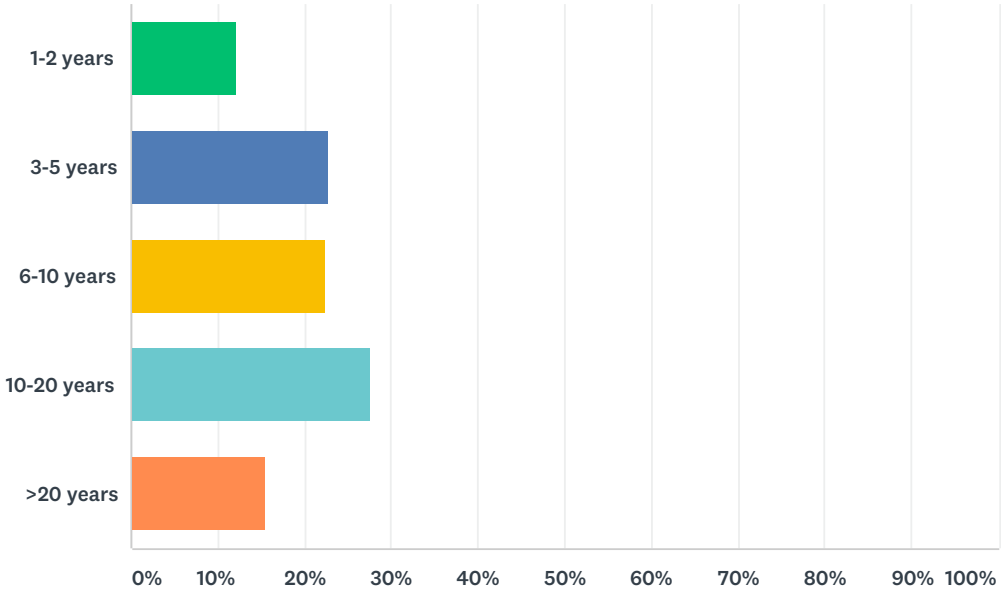
Answered: 2,154 Skipped: 2



ANSWER CHOICES	RESPONSES	
At work	87.70%	1,889
At school	11.10%	239
In personal time, for hobby projects or to try new things	71.73%	1,545
Total Respondents: 2,154		

Q2 How many years of programming experience do you have in C++ specifically?

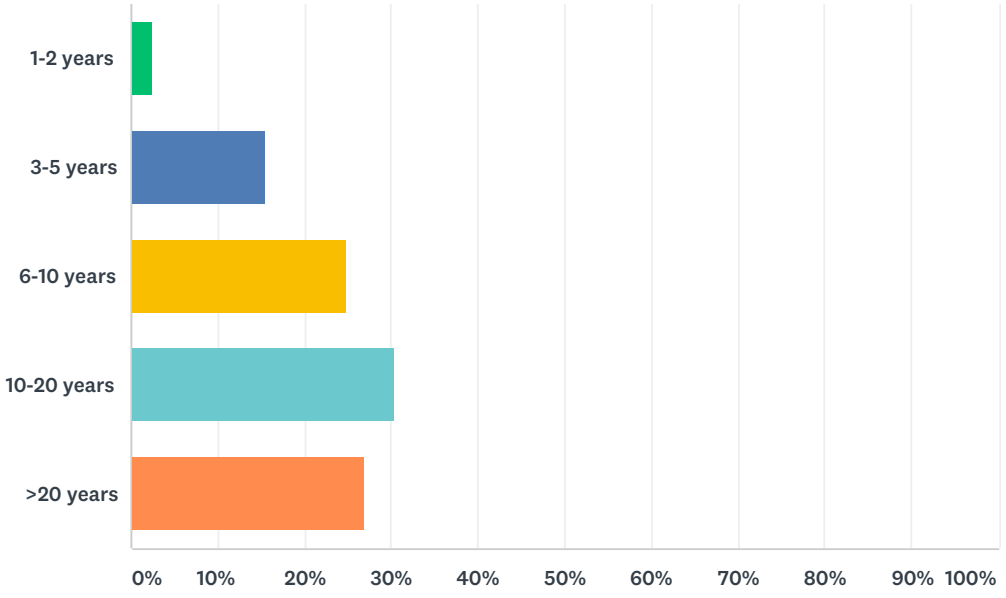
Answered: 2,151 Skipped: 5



ANSWER CHOICES	RESPONSES	
1-2 years	12.04%	259
3-5 years	22.73%	489
6-10 years	22.32%	480
10-20 years	27.52%	592
>20 years	15.39%	331
TOTAL		2,151

Q3 How many years of programming experience do you have overall (all languages)?

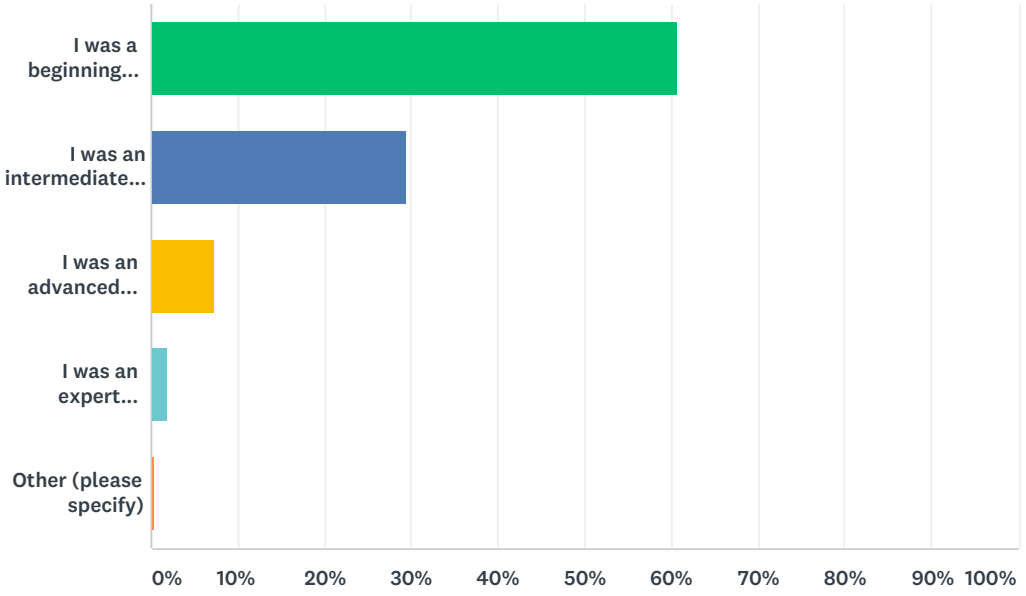
Answered: 2,153 Skipped: 3



ANSWER CHOICES	RESPONSES	
1-2 years	2.46%	53
3-5 years	15.47%	333
6-10 years	24.90%	536
10-20 years	30.28%	652
>20 years	26.89%	579
TOTAL		2,153

Q4 When you first learned C++, how much programming experience did you already have?

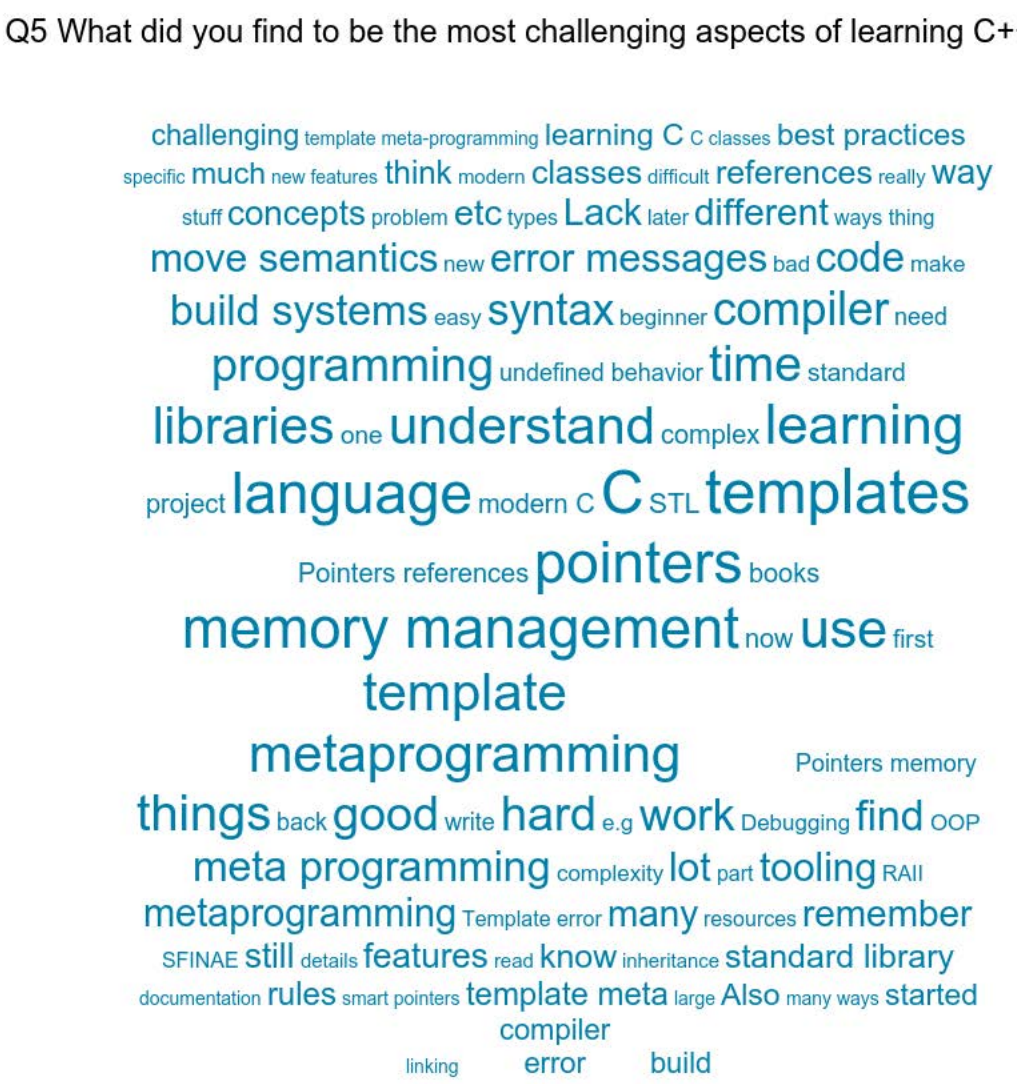
Answered: 2,154 Skipped: 2



ANSWER CHOICES	RESPONSES	
I was a beginning programmer	60.77%	1,309
I was an intermediate programmer	29.57%	637
I was an advanced programmer	7.34%	158
I was an expert programmer	1.81%	39
Other (please specify)	0.51%	11
TOTAL		2,154

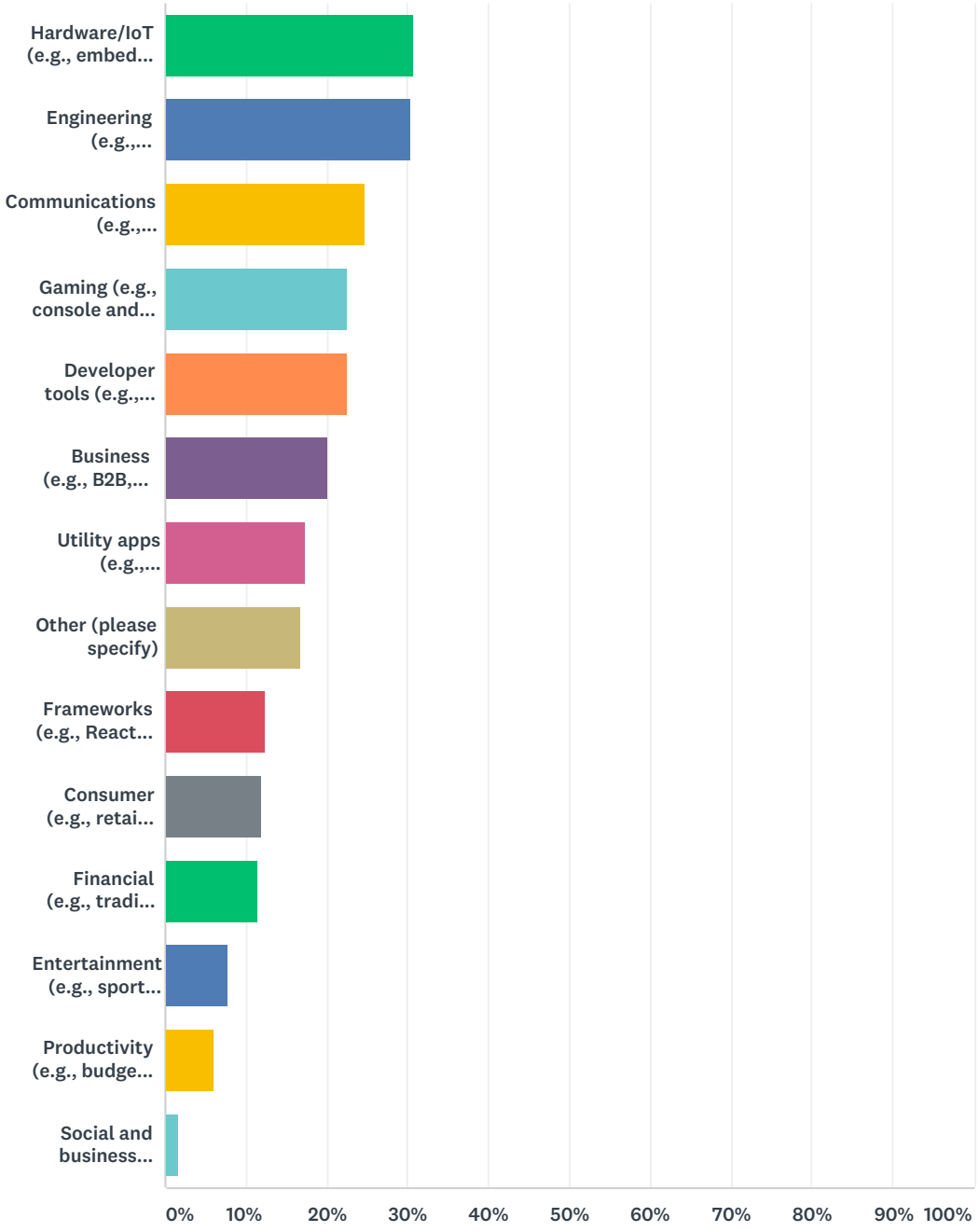
Q5 What did you find to be the most challenging aspects of learning C++?

Answered: 1,559 Skipped: 597



Q6 What types of projects do you work on? (select all that apply)

Answered: 2,140 Skipped: 16

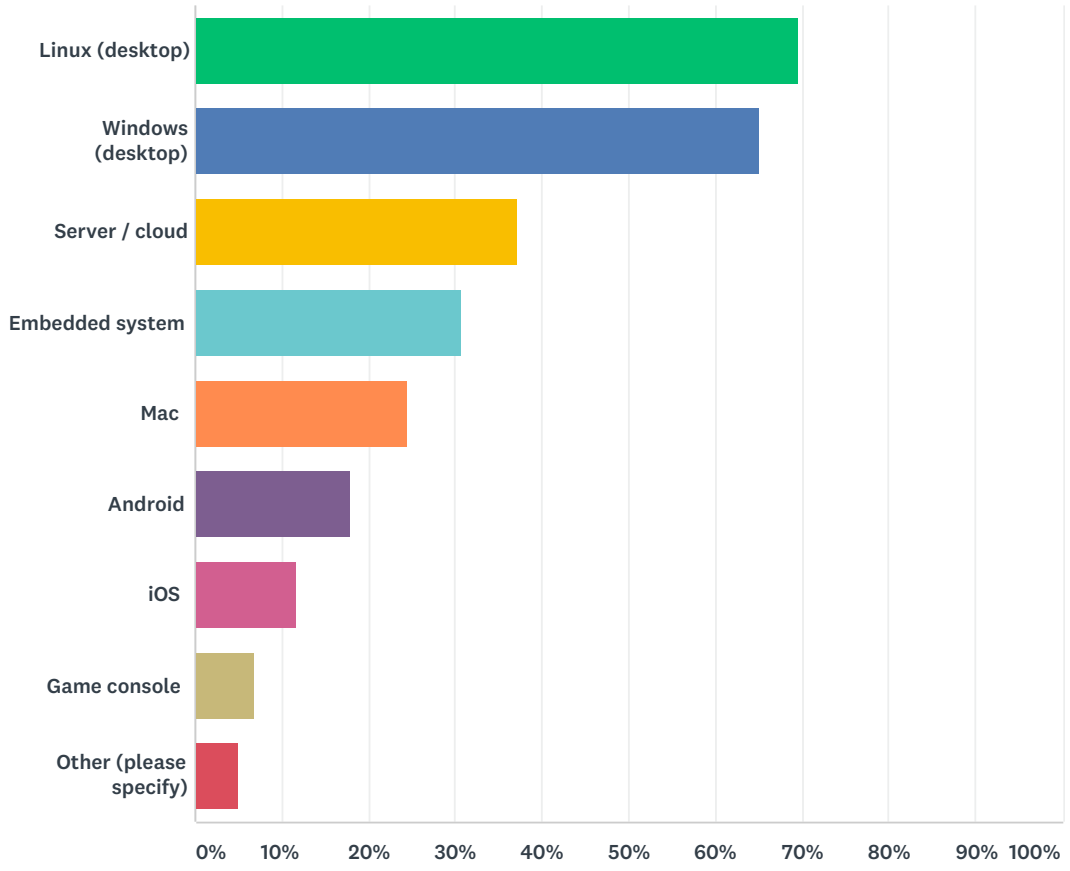


ANSWER CHOICES	RESPONSES	
Hardware/IoT (e.g., embedded systems, home automation)	30.70%	657
Engineering (e.g., avionics, power management)	30.33%	649
Communications (e.g., networking, email)	24.72%	529
Gaming (e.g., console and mobile games)	22.57%	483
Developer tools (e.g., compilers, code editors)	22.52%	482

Business (e.g., B2B, B2E)	20.05%	429
Utility apps (e.g., calculators, simple image editors)	17.34%	371
Other (please specify)	16.64%	356
Frameworks (e.g., React, Unity)	12.43%	266
Consumer (e.g., retail websites, mobile apps)	11.96%	256
Financial (e.g., trading, mortgage, asset management)	11.45%	245
Entertainment (e.g., sports apps, video streaming)	7.66%	164
Productivity (e.g., budget tracking, note taking)	6.17%	132
Social and business networking (e.g., Facebook, Twitter)	1.78%	38
Total Respondents: 2,140		

Q7 What platforms do you develop for? (select all that apply)

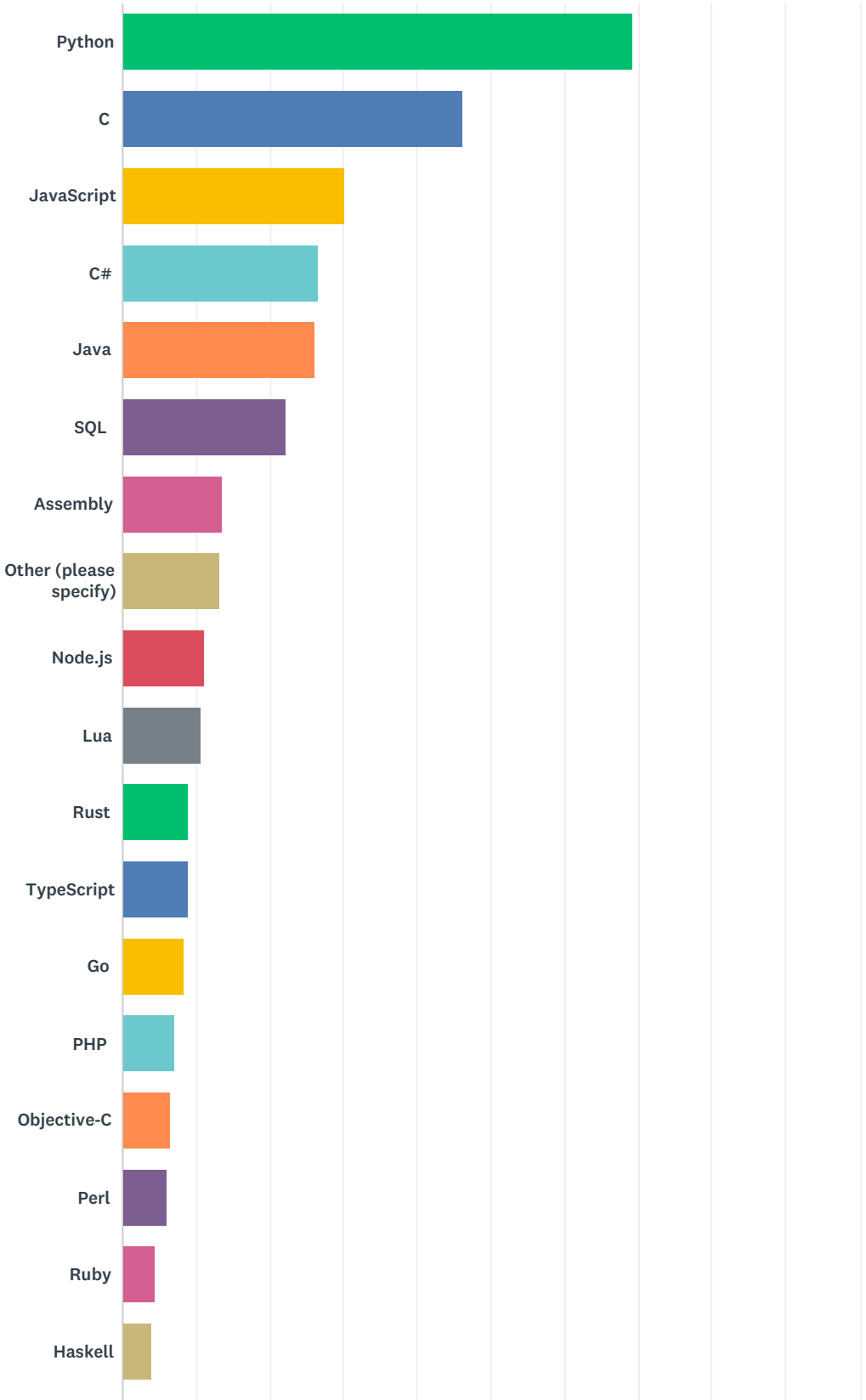
Answered: 2,147 Skipped: 9

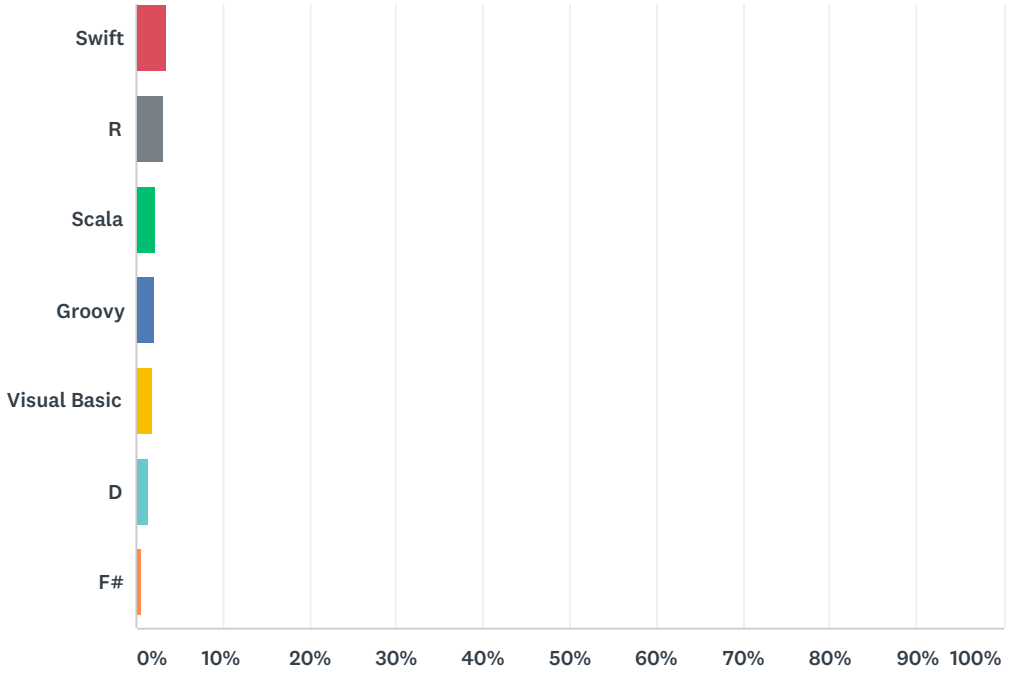


ANSWER CHOICES	RESPONSES	
Linux (desktop)	69.63%	1,495
Windows (desktop)	65.11%	1,398
Server / cloud	37.17%	798
Embedded system	30.79%	661
Mac	24.45%	525
Android	17.93%	385
iOS	11.69%	251
Game console	6.94%	149
Other (please specify)	5.08%	109
Total Respondents: 2,147		

Q8 Besides C++, what programming languages/environments do you use in your current and recent projects? (select all that apply)

Answered: 2,073 Skipped: 83



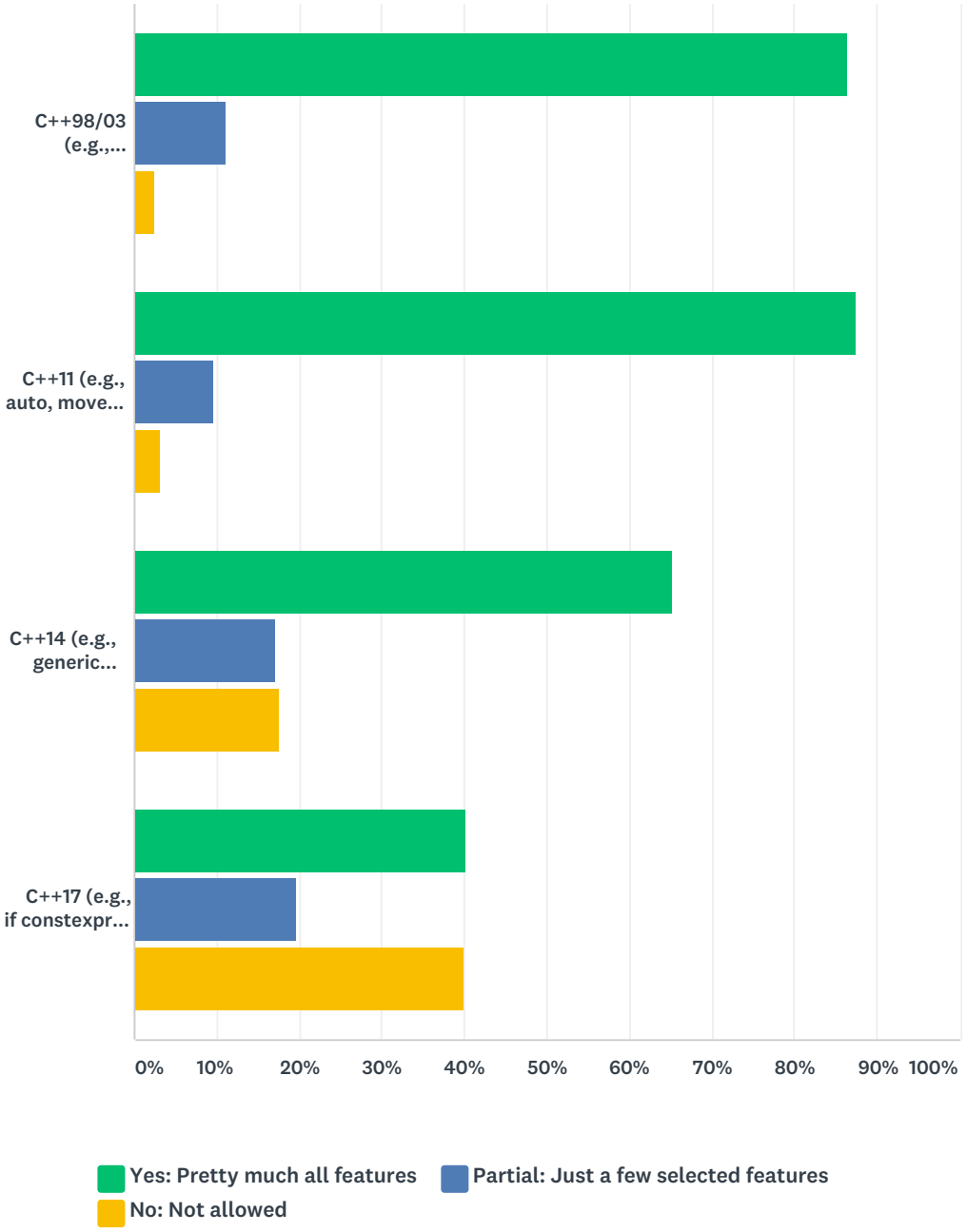


ANSWER CHOICES	RESPONSES	
Python	69.18%	1,434
C	46.26%	959
JavaScript	30.20%	626
C#	26.63%	552
Java	26.19%	543
SQL	22.14%	459
Assembly	13.51%	280
Other (please specify)	13.12%	272
Node.js	11.05%	229
Lua	10.66%	221
Rust	9.07%	188
TypeScript	8.97%	186
Go	8.35%	173
PHP	7.14%	148
Objective-C	6.42%	133
Perl	5.98%	124
Ruby	4.34%	90
Haskell	3.96%	82
Swift	3.52%	73
R	3.04%	63

Scala	2.22%	46
Groovy	2.17%	45
Visual Basic	1.98%	41
D	1.40%	29
F#	0.72%	15
Total Respondents: 2,073		

Q9 What version(s) of C++ are you allowed to use on your current project (work or school)?

Answered: 2,134 Skipped: 22

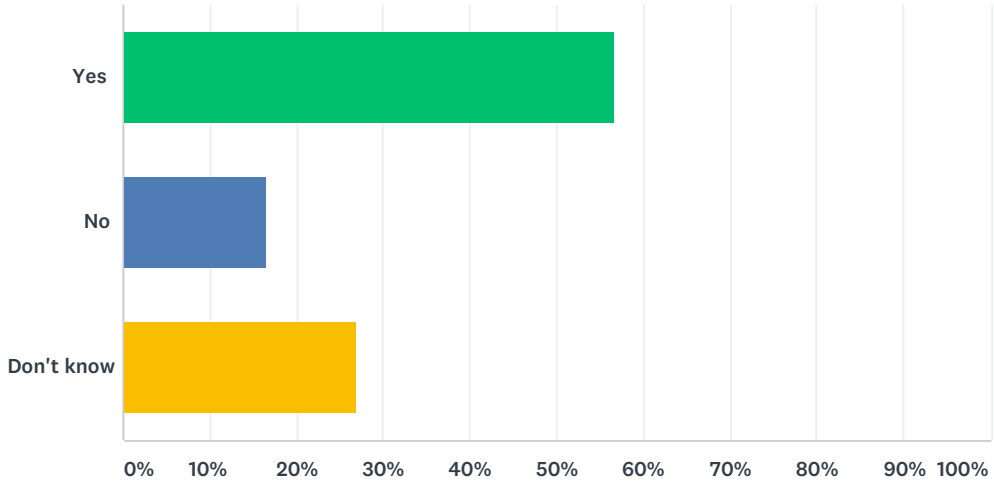


	YES: PRETTY MUCH ALL FEATURES	PARTIAL: JUST A FEW SELECTED FEATURES	NO: NOT ALLOWED	TOTAL	WEIGHTED AVERAGE
C++98/03 (e.g., exceptions, templates, RTTI)	86.39% 1,663	11.01% 212	2.60% 50	1,925	2.84
C++11 (e.g., auto, move semantics, =delete/=default, shared_ptr, lambdas)	87.39% 1,746	9.56% 191	3.05% 61	1,998	2.84

C++14 (e.g., generic lambdas, auto return types, general constexpr functions)	65.23% 1,302	17.13% 342	17.64% 352	1,996	2.48
C++17 (e.g., if constexpr, if/switch scoped variables, structured bindings, string_view, optional/any/variant, Parallel STL)	40.25% 815	19.75% 400	40.00% 810	2,025	2.00

Q10 In the next 12 months, does your current project plan to start allowing additional use of newer C++ standard features (i.e., more than in the previous answer)?

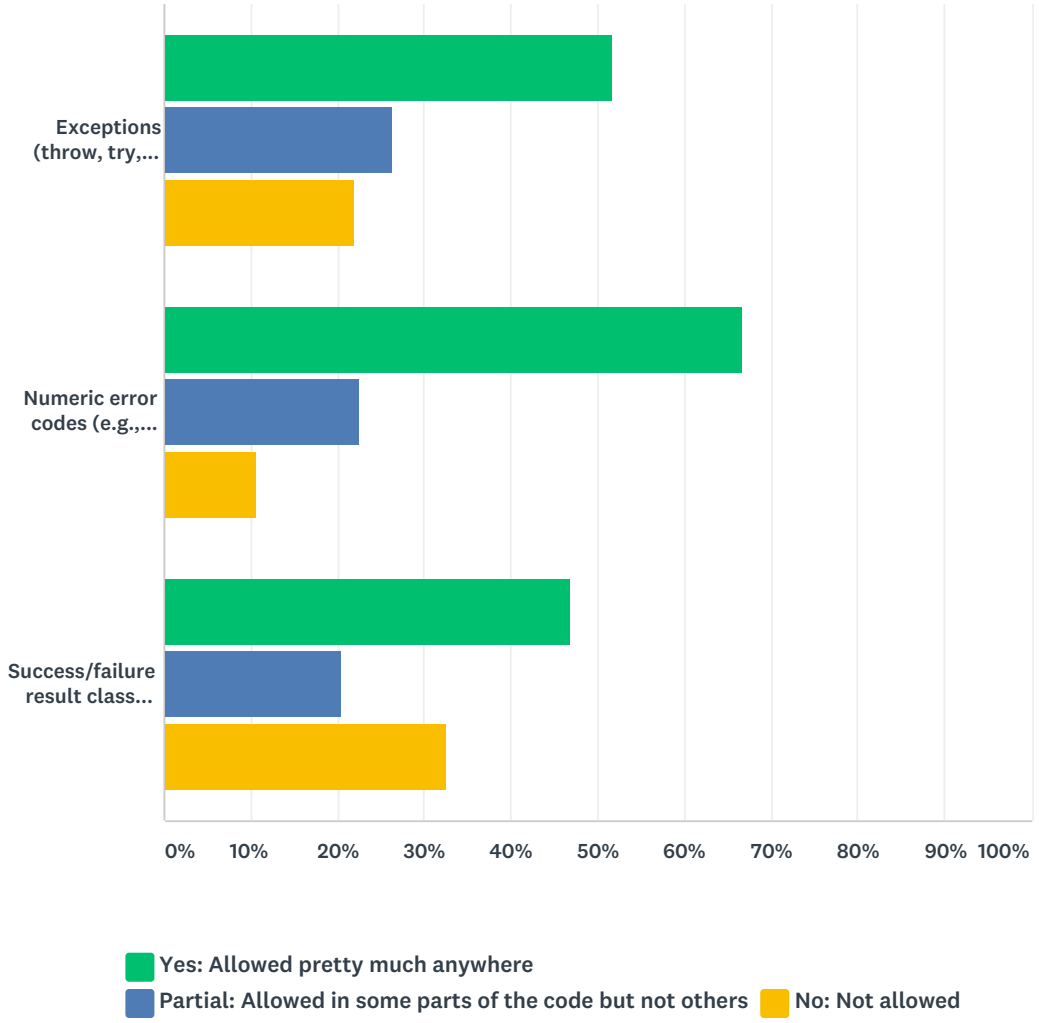
Answered: 2,128 Skipped: 28



ANSWER CHOICES	RESPONSES	
Yes	56.63%	1,205
No	16.45%	350
Don't know	26.93%	573
TOTAL		2,128

Q11 What error reporting methods are allowed on your current project (work or school)?

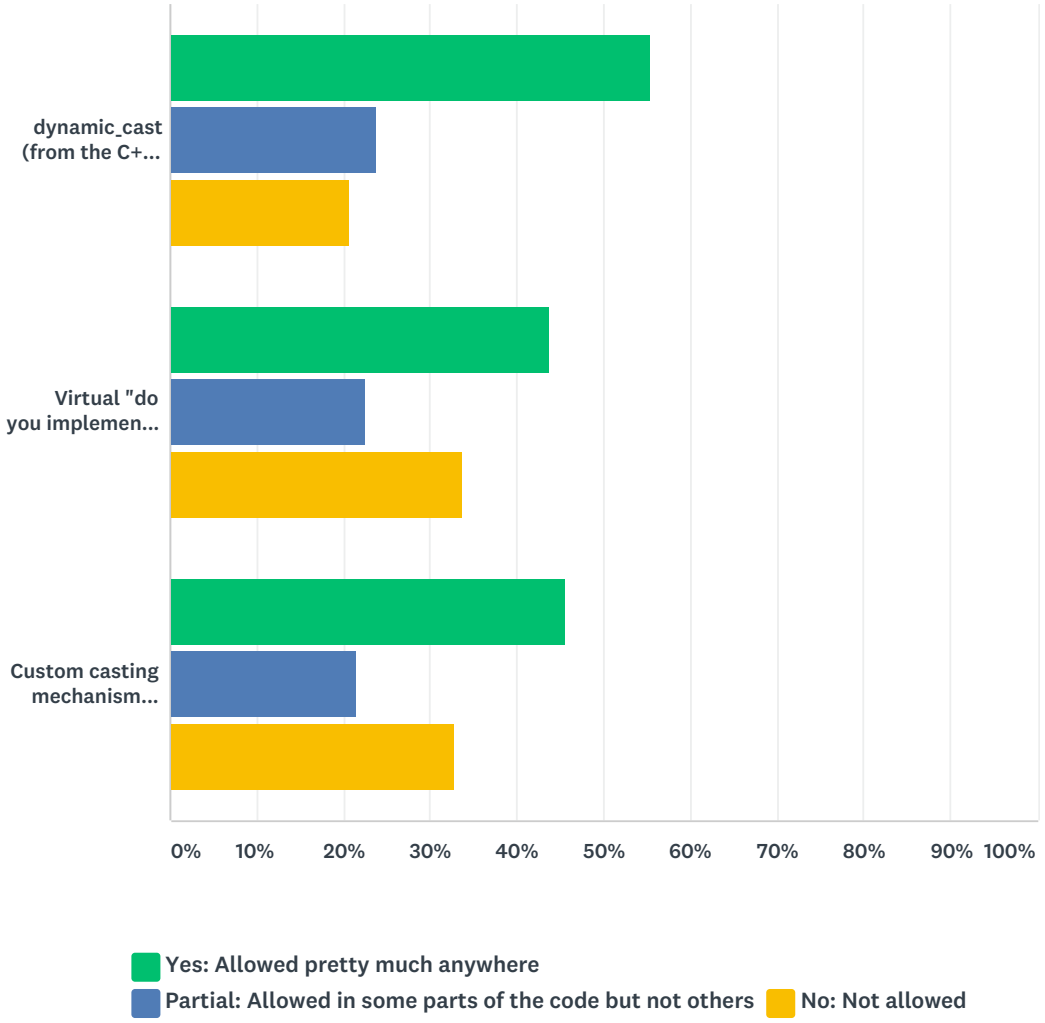
Answered: 2,123 Skipped: 33



	YES: ALLOWED PRETTY MUCH ANYWHERE	PARTIAL: ALLOWED IN SOME PARTS OF THE CODE BUT NOT OTHERS	NO: NOT ALLOWED	TOTAL	WEIGHTED AVERAGE
Exceptions (throw, try, catch)	51.66% 1,090	26.40% 557	21.94% 463	2,110	2.30
Numeric error codes (e.g., errc, error_code, HRESULT)	66.83% 1,378	22.60% 466	10.57% 218	2,062	2.56
Success/failure result class types (e.g., Boost.Expected, Boost.Outcome)	46.78% 936	20.59% 412	32.63% 653	2,001	2.14

Q12 What run-time casting methods are allowed on your current project (work or school)?

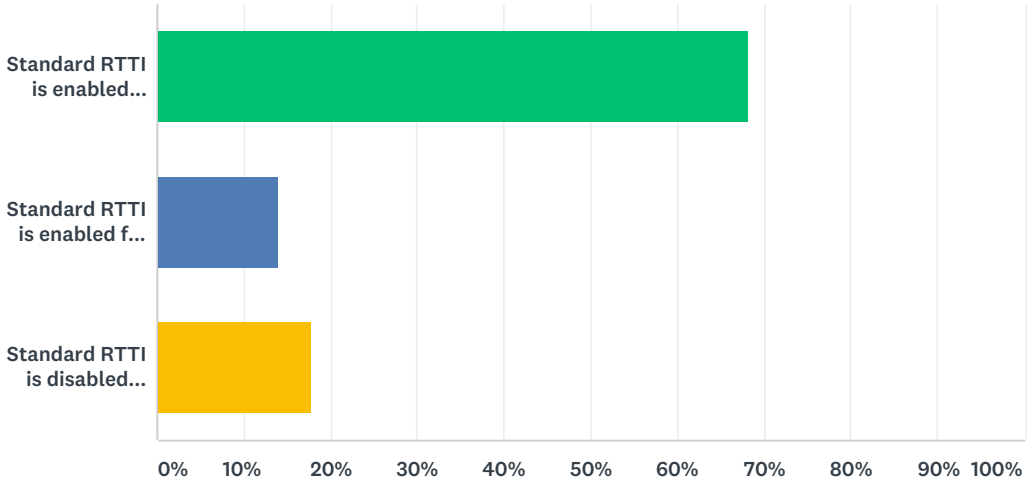
Answered: 2,083 Skipped: 73



	YES: ALLOWED PRETTY MUCH ANYWHERE	PARTIAL: ALLOWED IN SOME PARTS OF THE CODE BUT NOT OTHERS	NO: NOT ALLOWED	TOTAL	WEIGHTED AVERAGE
dynamic_cast (from the C++ standard)	55.35% 1,149	23.89% 496	20.76% 431	2,076	2.35
Virtual "do you implement" query function (e.g., QueryInterface)	43.64% 857	22.66% 445	33.71% 662	1,964	2.10
Custom casting mechanism (e.g., project-specific type tag and query)	45.59% 890	21.52% 420	32.89% 642	1,952	2.13

Q13 C++ compilers commonly provide a switch, such as -fno-rtti-data or /GR-, to turn off support for Standard C++ RTTI (e.g., typeid, dynamic_cast). When building your current project, is standard RTTI enabled, or is it disabled using such a switch?

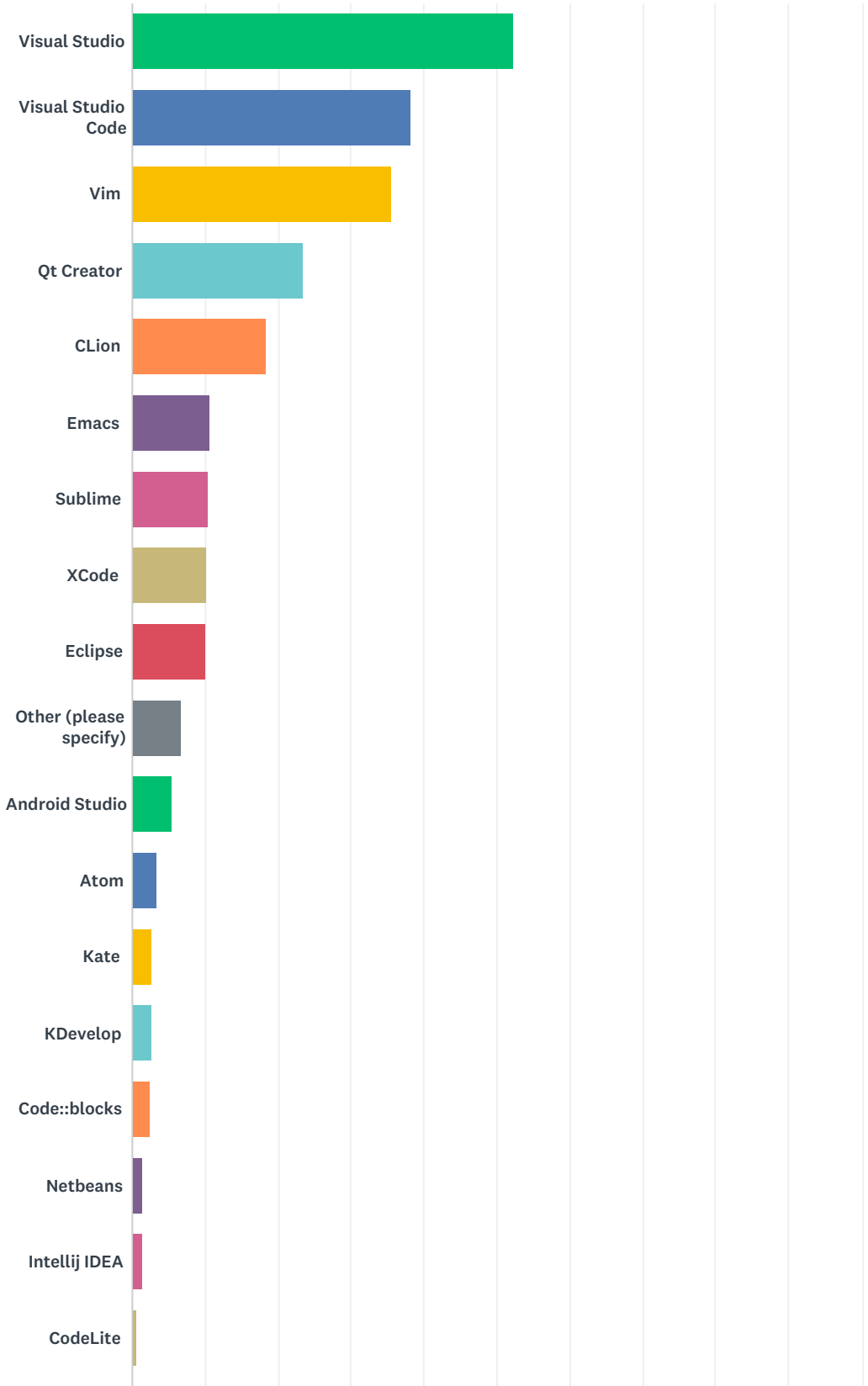
Answered: 2,058 Skipped: 98

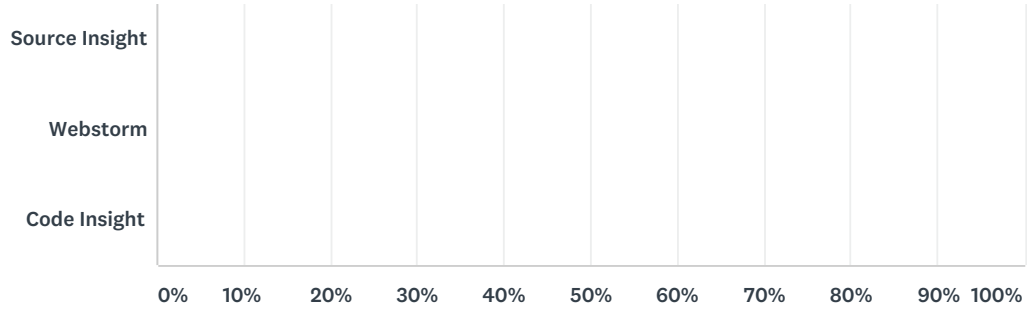


ANSWER CHOICES	RESPONSES	
Standard RTTI is enabled everywhere in my project	68.22%	1,404
Standard RTTI is enabled for building some parts, disabled for building others	14.09%	290
Standard RTTI is disabled everywhere in my project	17.69%	364
TOTAL		2,058

Q14 Which development environments (IDEs) or editors do you use for C++ development?

Answered: 2,140 Skipped: 16

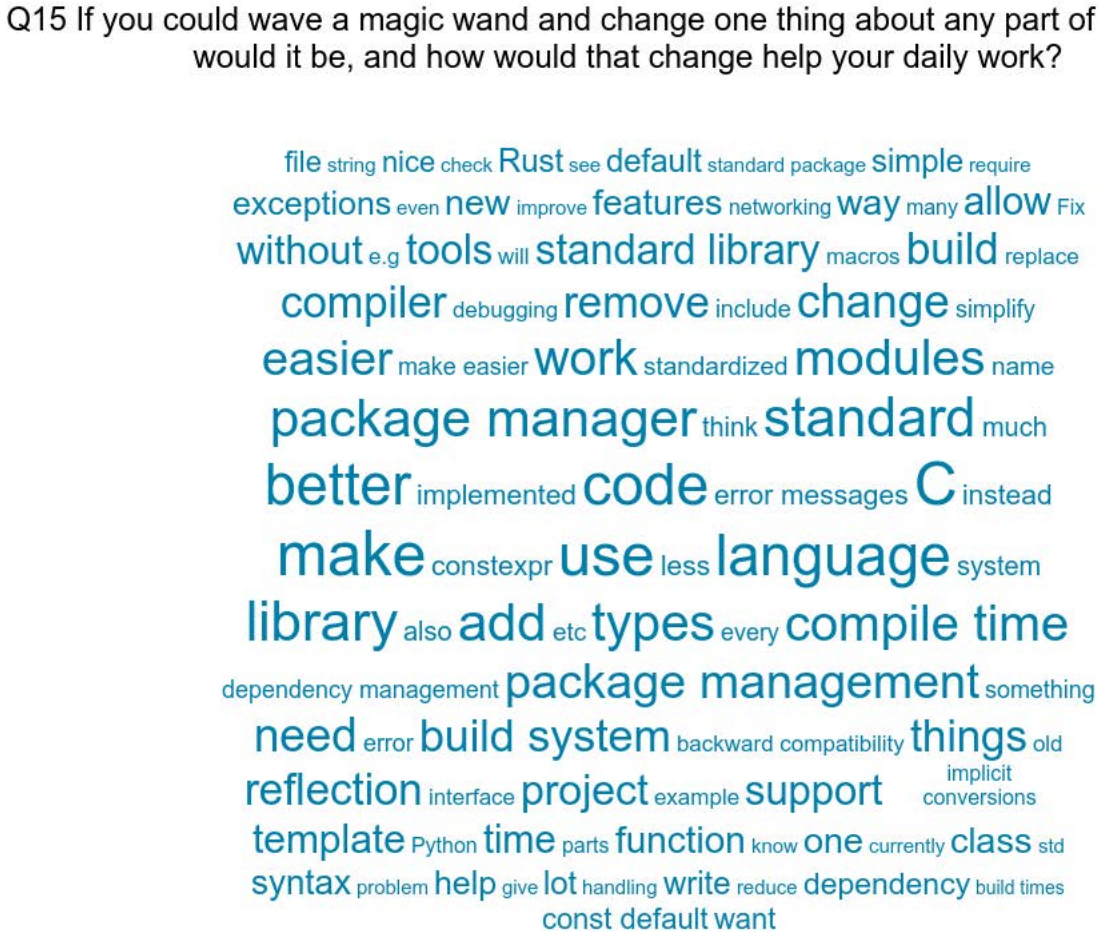




ANSWER CHOICES	RESPONSES	
Visual Studio	52.29%	1,119
Visual Studio Code	38.22%	818
Vim	35.47%	759
Qt Creator	23.46%	502
CLion	18.50%	396
Emacs	10.70%	229
Sublime	10.51%	225
XCode	10.28%	220
Eclipse	10.00%	214
Other (please specify)	6.73%	144
Android Studio	5.42%	116
Atom	3.27%	70
Kate	2.76%	59
KDevelop	2.71%	58
Code::blocks	2.57%	55
Netbeans	1.50%	32
Intellij IDEA	1.40%	30
CodeLite	0.61%	13
Source Insight	0.28%	6
Webstorm	0.23%	5
Code Insight	0.00%	0
Total Respondents: 2,140		

Q15 If you could wave a magic wand and change one thing about any part of C++, what would it be, and how would that change help your daily work?

Answered: 1,404 Skipped: 752



Q16 Do you have any additional feedback for C++ standardization?

Answered: 803 Skipped: 1,353