



Labor Market Analysis for Program Recommendation Software Development Foundations Occupations East Bay Subregion

Prepared by the Bay Region Center of Excellence for Labor Market Research

Certificate Program

April 2026

Recommendation Based on Labor Market Data: <input type="checkbox"/> Yes <input type="checkbox"/> With Reservations <input checked="" type="checkbox"/> No		
	Earning Wage Meets Living Wage	Meets Demand
Bay Region	Entry Level Hourly Wage- \$40 Mid-Career Hourly Wage- \$61 Mid-Career Hourly Wage at or above the Bay Living Wage (\$27)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Demand: 556 Supply: 635 (114% of Demand is Met) Gap: -79 In-Demand? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
East Bay Subregion	Entry Level Hourly Wage- \$35 Mid-Career Hourly Wage- \$54 Mid-Career Hourly Wage at or above the Subregion Living Wage (\$25)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Demand: 89 Supply: 353 (397% of Demand is Met) Gap: -264 In-Demand? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Note: An occupation is considered to provide a living wage if the mid-career wage is at or above the amount required for a single adult to be economically self-sufficient within a specified region. As a rule of thumb, an occupation will be considered **in-demand** when the supply is less than 75% of the demand **and** the labor market gap exceeds 40 openings (a reasonable regional threshold for starting a new program), but this approach may not apply in all cases. For definitions of demand, supply, and living wage, please scroll to the bottom of the report under **Definitions**.

Recommendation

Based on the labor market data, we do not recommend this proposed program. The occupations meet both the Bay Region and East Bay subregion living wage at the entry and mid-career levels. But there is an oversupply of 79 students in the Bay Region and 264 students in the East Bay subregion to complete their program. Lastly, 114% of

labor market demand is being met in the Bay Region, and 397% of demand is being met in the East Bay subregion overall.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0707.10 - Computer Programming programs in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at subregion in the state and region.

This report profiles Software Development Foundations Occupations in the 12 county Bay Region and in the East Bay subregion. The occupations classified as middle-skill occupations require a certificate, or an associate degree, or it may require a bachelor's degree, but 33% or fewer of current workers in these roles hold one.

- Computer Network Support Specialists (15-1231):** Analyze, test, troubleshoot, and evaluate existing network systems, such as local area networks (LAN), wide area networks (WAN), cloud networks, servers, and other data communications networks. Perform network maintenance to ensure networks operate correctly with minimal interruption.
 - Typical Entry-Level Educational: Associate's degree
 - Skill Level: Middle-Skill
 - Work Experience Required: None
 - Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 38%
- Web Developers (15-1254):** Develop and implement websites, web applications, application databases, and interactive web interfaces. Evaluate code to ensure that it is properly structured, meets industry standards, and is compatible with browsers and devices. Optimize website performance, scalability, and server-side code and processes. May develop website infrastructure and integrate websites with other computer applications.
 - Typical Entry-Level Educational: Bachelor's degree
 - Skill Level: Middle-Skill
 - Work Experience Required: None
 - Percentage of individuals 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment: 25%

Occupational Demand

Table 1. Employment Outlook for Software Development Foundations Occupations in the Bay Region

Occupation	2024 Jobs	2029 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	Entry Level Hourly	Mid-Career Hourly Wage
Computer Network Support Specialists	3,360	3,501	141	4%	1,236	247	\$35	\$46
Web Developers	5,137	5,108	-28	-1%	1,547	309	\$43	\$70
Total	8,497	8,609	112	1%	2,783	556	\$40	\$61

Source: Lightcast 2026.1

The Bay Region includes: Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for Software Development Foundations Occupations in the East Bay Subregion

Occupation	2024 Jobs	2029 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	Entry Level Hourly	Mid-Career Hourly Wage
Computer Network Support Specialists	690	671	-19	-3%	208	42	\$32	\$42
Web Developers	900	850	-50	-6%	236	47	\$37	\$63
Total	1,590	1,521	-69	-4%	444	89	\$35	\$54

Source: Lightcast 2026.1

East Bay Subregion includes: Alameda, Contra Costa Counties

Job Postings in the Bay Region and East Bay Subregion

Table 3. Number of Job Postings by Occupation for the latest 12 months

Occupation	Bay Region	East Bay
Web Developers	4,474	614
Computer Network Support Specialists	493	151

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Table 4a. Top Job Titles in Job Postings for Software Development Foundations Occupations in the Bay Region

Title	Bay	Title	Bay
Back End Engineers	1,066	JavaScript Engineers	48
Front End Engineers	467	Ruby on Rails Developers	48
Front End Developers	339	Java Back End Engineers	43
Back End Developers	231	Ruby on Rails Engineers	42
Java Back End Developers	175	Lead Front End Engineers	39
Back End Software Engineers	157	Web Engineers	39
Full Stack Engineers	93	Members of Technical Staff	38
Web Developers	86	Shopify Developers	37
Foundation Engineers	58	Principal Software Engineers	33

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Table 4b. Top Job Titles in Job Posting for Software Development Foundations Occupations in the East Bay Subregion

Title	East Bay	Title	East Bay
Back End Engineers	143	JavaScript Engineers	11
Back End Developers	78	Web Developers	10
Front End Developers	64	Lead .NET Developers	10
Front End Engineers	24	Full Stack Engineers	10

Title	East Bay	Title	East Bay
Java Back End Developers	19	Network Technicians	9
Shopify Developers	14	Technicians	9
Python Back End Developers	14	Lead Front End Engineers	8
Back End Software Engineers	13	Lead Network Technicians	7
Foundation Engineers	13	IT Assistants	7

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Industry Concentration

Table 5. Industries Hiring for Software Development Foundations Occupations in the Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2024)	Jobs in Industry (2029)	% Change (2024-29)	% Occupation Group in Industry (2024)
Custom Computer Programming Services	1,817	1,837	1%	21%
Computer Systems Design Services	951	968	2%	11%
Computing Infrastructure Providers, Data Processing, Web Hosting, and Related Services	594	712	20%	7%
Web Search Portals and All Other Information Services	489	509	4%	6%
Software Publishers	404	437	8%	5%
Corporate, Subsidiary, and Regional Managing Offices	269	321	19%	3%
Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers	236	214	-9%	3%
Colleges, Universities, and Professional Schools	224	236	5%	3%
Colleges, Universities, and Professional Schools (State Government)	187	182	-3%	2%
Local Government, Excluding Education and Hospitals	171	177	4%	2%

Source: Lightcast 2026.1

Table 6. Top Employers Posting Software Development Foundations Occupations in the Bay Region and the East Bay Subregion

Employer	Bay	Employer	East Bay
Jobot	84	Plenful	22
Apple	81	Alexander Chapman	18
Insight Global	66	Robert Half	18

Employer	Bay	Employer	East Bay
Alexander Chapman	64	Insight Global	13
Verkada	63	Tesla	13
Plenful	61	Sibitalent Corp	12

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Educational Supply

There are fourteen community colleges in the Bay Region issuing 576 awards on average annually (last 3 years ending 2023-24) on TOP 0707.10 - Computer Programming. In the East Bay subregion, there are three community colleges that issued 353 awards on average annually (last 3 years) on this TOP code.

There are two other CTE educational institutions in the Bay Region issuing 59 awards on average annually (last 3 years ending 2022-23) on CIP 11.0201- Computer Programming/Programmer, General.

Table 7a. Community College Awards on TOP 0707.10 - Computer Programming in the Bay Region

College	Subregion	Associate Degree	High unit Certificate	Low unit Certificate	Noncredit award	Total
Berkeley City	East Bay	2	2	0	0	4
Cabrillo	SC-Monterey	0	0	4	0	4
Contra Costa	East Bay	1	0	0	0	1
Deanza	Silicon Valley	7	0	54	5	66
Diablo Valley	East Bay	151	0	164	0	315
Gavilan	Silicon Valley	17	0	1	0	18
Hartnell	SC-Monterey	33	2	0	0	35
Laney	East Bay	13	0	6	0	19
Ohlone	East Bay	2	0	12	0	14
San Francisco	Mid-Peninsula	0	0	51	0	51
San Jose City	Silicon Valley	10	10	11	0	31
San Mateo	Mid-Peninsula	1	1	7	0	9
Solano	North Bay	8	0	0	0	8
West Valley	Silicon Valley	0	0	1	0	1
Total	-	245	15	311	5	576

Source: Data Mart

Note: The annual average for awards is 2021-22 to 2023-24.

Table 7b. Other CTE Institutions Awards on CIP 11.0201- Computer Programming/Programmer, General. in the Bay Region

College	Subregion	Bachelor's degree	Certificates of less than 1 year	Total
Dominican University of California	North Bay	51	0	51
University of Silicon Valley	Silicon Valley	7	1	8
Total	-	58	1	59

Source: IPEDS

Note: The annual average for awards is 2020-21 to 2022-23.

Gap Analysis

Based on the data included in this report, there is a labor market gap in the Bay Region with 556 annual openings for the Software Development Foundations occupational cluster and 635 annual (3-year average) awards for an annual

oversupply of 79 students. In the East Bay subregion, there is also a gap with 89 annual openings and 353 annual (3-year average) awards for an annual oversupply of 264 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0707.10 - Computer Programming

Metric Outcomes	Bay All CTE Program	State 0707.10	Bay 0707.10	East Bay 0707.10
Students with a Job Closely Related to Their Field of Study	75%	69%	74%	75%
Median Annual Earnings for SWP Exiting Students	\$58,379	\$48,848	\$63,894	\$51,296
Median Change in Earnings for SWP Exiting Students	31%	31%	29%	34%
Exiting Students Who Attained the Living Wage	50%	48%	53%	47%

Source: DataVista Program Median of 2020 to 2022.

Skills, Certifications and Education

Table 9. Top Skills in Job Postings for Software Development Foundations Occupations in the Bay Region

Skill	Posting	Skill	Posting
Scalability	2,126	CI/CD	1,099
Application Programming Interface (API)	1,681	Front End (Software Engineering)	1,055
React.js (Javascript Library)	1,594	Software Engineering	1,054
JavaScript (Programming Language)	1,535	Workflow Management	990
Front End Design	1,492	Back End (Software Engineering)	966
Computer Science	1,472	Cascading Style Sheets (CSS)	931
Python (Programming Language)	1,438	Java (Programming Language)	914
TypeScript	1,325	RESTful API	911
Artificial Intelligence	1,224	Node.js (Javascript Library)	825
Amazon Web Services	1,160	Kubernetes	810

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Table 10. Certifications in Job Postings for Software Development Foundations Occupations in the Bay Region

Certification	Posting	Certification	Posting
Automotive Service Excellence (ASE) Certification	11	IAT Level II Certification	8
CompTIA Certification	10		

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Table 11. Education Requirements for Software Development Foundations Occupations in the Bay Region

Education Level	Job Postings	% of Total
High school or GED	114	5%
Associate degree	74	3%
Bachelor's degree & higher	2,147	92%

Source: Lightcast 2026.1; "Job Posting Analytics." Apr. 2025 - Mar. 2026

Note: 68% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

Methodology

Occupations for this report were identified by use of job descriptions and skills listed in O*Net. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCCO Data Mart and CTE Launchboard.

Definitions

Demand refers to average annual openings which includes a combination of both [new jobs and replacement jobs](#) between 2024 to 2029. New jobs represent the total number of additional workers required in an occupation, calculated as the difference between the current number of workers and the projected number of unfilled positions. Replacements are jobs that will need to be filled by [new hires](#) due to existing workers leaving the occupation. The average annual openings figure is derived by dividing total openings (2024 to 2029) by five years.

Supply refers to the average number of [graduates](#) between academic years 2021–2022 and 2023–2024. Graduates include students from community colleges, other two-year private and public institutions, as well as four-year institutions.

Living wage refers to the amount of income required for working families to meet basic needs at a minimally adequate level, considering family composition, ages of children, and geographic differences in costs based on the Self-Sufficiency Standard methodology.

Entry-level wages are the hourly earnings paid to workers who are newly entering an occupation.

Mid-career wages are the hourly earnings paid to workers who have accumulated several years of experience in an occupation, reflecting increased productivity, skill proficiency, and responsibility beyond entry-level roles but short of late-career or senior positions.

Sources

O*Net Online
Lightcast
CTE LaunchBoard www.calpassplus.org
Statewide CTE Outcomes Survey
Employment Development Department Unemployment Insurance Dataset
CCCO Data Mart

Contacts

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