

# Model Curriculum

## JUNIOR SOFTWARE DEVELOPER

SECTOR: IT-ITeS  
SUB-SECTOR: IT Services  
OCCUPATION: Application Development  
REFERENCE ID: SSC/Qo5o8, version 1.0  
NSQF LEVEL: 4



## Certificate

### COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the  
**IT-ITes Sector Skills Council NASSCOM**

for  
**MODEL CURRICULUM**

Complying to the National occupation standards of  
Job Role / Qualification Pack Junior Software Developer  
QP No. SSC/Qo5o8 NSQF level 4

Date of Issuance: December 1<sup>st</sup> 2016

Valid Upto \*: December 1<sup>st</sup> 2017

\* Valid up to the next review date of the Qualification Pack



Authorised Signatory  
(IT-ITes Sector Skills Council NASSCOM)

## TABLE OF CONTENTS

<b>1. Curriculum</b>	<b>04</b>
<b>2. Trainer Prerequisites</b>	<b>09</b>
<b>3. Annexure: Assessment Criteria</b>	<b>10</b>

# Junior Software Developer

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of "Junior Software Developer" in the "IT-ITeS" Sector/Industry and aims at building the following key competencies in the learner.

<b>Program Name</b>	<b>Junior Software Developer</b>		
<b>Qualification Pack Name &amp; Reference ID.</b>	Junior Software Developer SSC/Q0508, version 1.0		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	31/12/2015
<b>Pre-requisites to Training</b>	10 <sup>th</sup> Standard		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>assist in performing software construction and software testing entry-level tasks in the IT Services industry</li> <li>manage work to meet requirements</li> <li>maintain a healthy, safe and secure working environment</li> </ul>		

The Course encompasses all six National Occupational Standards (NOS) of "Junior Software Developer" SSC/Q0508 Qualification Pack issued by "IT-ITeS Sector Skills Council NASSCOM".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Assist in performing software construction and software testing entry-level tasks in the IT Services industry</p> <p><b>Theory Duration (hh:mm)</b> 26:00</p> <p><b>Practical Duration (hh:mm)</b> 99:00</p> <p><b>Corresponding NOS Code</b> SSC/No506</p>	<p>Candidates will be able to:</p> <ul style="list-style-type: none"> <li>Demonstrate basic computer and internet literacy including operating a Computer, describing its major components and how they work, using Windows and Linux OS, operating a browser, searching the internet,</li> <li>Managing mails and using social internet media.</li> <li>Demonstrate aptitude for analyzing information and making logical conclusions.</li> <li>Demonstrate knowledge of the foundational mathematical concepts in computing.</li> <li>Design algorithms to solve problems and convert them into code using the appropriate programming language constructs.</li> <li>Read and execute a test case and record the outcome in the appropriate</li> </ul>	Refer to Unique Equipment Required section
2	<p>Self and work Management</p> <p><b>Theory Duration (hh:mm)</b> 30:00</p> <p><b>Practical Duration</b></p>	<p>Candidates will be able to:</p> <ul style="list-style-type: none"> <li>Establish and agree work requirements with appropriate people</li> <li>Keep immediate work area clean and tidy</li> <li>Utilize time effectively</li> <li>Use resources correctly and efficiently</li> <li>Treat confidential information correctly</li> </ul>	Refer to Unique Equipment Required section

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>(hh:mm) 70:00</p> <p><b>Corresponding NOS Code</b> SSC/N9001</p>	<ul style="list-style-type: none"> <li>• Work in line with organization's policies and procedures</li> <li>• Work within the limits of job role</li> <li>• Obtain guidance from appropriate people, where necessary</li> <li>• Ensure work meets the agreed requirements</li> </ul>	
3	<p>Team Work and Communication</p> <p><b>Theory Duration (hh:mm)</b> 12:00</p> <p><b>Practical Duration (hh:mm)</b> 38:00</p> <p><b>Corresponding NOS Code</b> SSC/N9002</p>	<p>Candidates will be able to:</p> <ul style="list-style-type: none"> <li>• Obtain guidance from appropriate people to agree the analysis to be performed on the data</li> <li>• Obtain advice and guidance from appropriate people on issues with data analysis outside their area of competence or</li> <li>• Review the results of their analysis with appropriate people</li> <li>• Undertake modifications to your analysis based on inputs from appropriate people</li> <li>• Communicate with colleagues clearly, concisely and accurately</li> <li>• Work with colleagues to integrate their work effectively with them</li> <li>• Pass on essential information to colleagues in line with organizational requirements</li> <li>• Work in ways that show respect for colleagues</li> <li>• Carry out commitments they have made to colleagues</li> <li>• Let colleagues know in good time if they cannot carry out your commitments, explaining the reasons</li> <li>• Identify any problems they have working with colleagues and take the initiative to solve these problems</li> <li>• Follow the organization's policies and procedures for working with colleagues</li> </ul>	Refer to Unique Equipment Required Section
6	<p>Managing Health and Safety</p> <p><b>Theory Duration (hh:mm)</b> 12:00</p> <p><b>Practical Duration (hh:mm)</b> 38:00</p> <p><b>Corresponding NOS Code</b> SSC/N9003</p>	<p>Candidates will be able to:</p> <ul style="list-style-type: none"> <li>• Comply with organization's current health, safety and security policies and procedures</li> <li>• Report any identified breaches in health, safety, and security policies and procedures to the designated person</li> <li>• Identify and correct any hazards that can deal with safely, competently and within the limits of authority</li> <li>• Report any hazards that one is not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected</li> <li>• Follow their organization's emergency procedures promptly, calmly, and efficiently</li> <li>• Identify and recommend opportunities for improving health, safety, and security to the designated person</li> </ul>	Refer to Unique Equipment Required section

Sr. No.	Module	Key Learning Outcomes	Equipment Required
7	Data and Information Management <b>Theory Duration (hh:mm)</b> 15:00  <b>Practical Duration (hh:mm)</b> 35:00  <b>Corresponding NOS Code</b> SSC/g004	Candidates will be able to: <ul style="list-style-type: none"> <li>• Complete any health and safety records legibly and accurately</li> <li>• Establish and agree with appropriate people the data/information they need to provide, the formats in which you need to provide it, and when they need to provide it</li> <li>• Obtain the data/information from reliable sources</li> <li>• Check that the data/information is accurate, complete and up-to-date</li> <li>• Obtain advice or guidance from appropriate people where there are problems with the data/information</li> <li>• Carry out rule-based analysis of the data/information, if required</li> <li>• Insert the data/information into the agreed formats</li> <li>• Check the accuracy of work, involving colleagues where required</li> <li>• Report any unresolved anomalies in the data/information to appropriate people</li> <li>• Provide complete, accurate and up-to-date data/information to the appropriate people in the required formats on time</li> </ul>	Refer to Unique Equipment Required Section
8	Learning and Self Development  <b>Theory Duration (hh:mm)</b> 5:00  <b>Practical Duration (hh:mm)</b> 20:00  <b>Corresponding NOS Code</b> SSC/N9005	Candidates will be able to: <ul style="list-style-type: none"> <li>• Obtain advice and guidance from appropriate people to develop your knowledge, skills and competence</li> <li>• Identify accurately the knowledge and skills they need for your job role</li> <li>• Identify accurately their current level of knowledge, skills and competence and any learning and development needs</li> <li>• Agree with appropriate people a plan of learning and development activities to address their learning needs</li> <li>• Undertake learning and development activities in line with their plan</li> <li>• Apply new knowledge and skills in the workplace, under supervision</li> <li>• Obtain feedback from appropriate people on their knowledge and skills and how effectively you apply them</li> <li>• Review their knowledge, skills and competence regularly and take appropriate action</li> </ul>	Refer to Unique Equipment Required Section

<p><b>Total Duration:</b></p> <p><b>Theory Duration (hh:mm)</b> 100:00</p> <p><b>Practical Duration (hh:mm)</b> 300:00</p>	<p><b>Unique Equipment Required:</b> Training room should be fully furnished with the following equipment / tools / accessories. Additional / specific resources, wherever applicable (e.g. Hardware, software) are indicated in the main text corresponding to relevant learning outcome. For Domain NOS, For NOS SSC/No506 – HTML, C++ / Java, IDE</p> <p>General:</p> <ul style="list-style-type: none"> <li>• Comfortable seats with adequate lighting, controlled temperature and acoustics for training and learning</li> <li>• White Board, Markers and Eraser</li> <li>• Projector with screen</li> <li>• Flip chart with markers</li> <li>• Faculty's PC/Laptop with latest configuration and internet connection</li> <li>• Supporting software / applications for projecting audio, video, recording,</li> <li>• Presentation Tools to support learning activities:</li> <li>• Intranet</li> <li>• Email</li> <li>• IMs</li> <li>• Learning management system e.g. Moodle, Blackboard to enable blended learning</li> <li>• Microphone / voice system for lecture and class activities</li> <li>• Handy Camera</li> <li>• Stationery kit – Staples, Glue, Chart Paper, Sketch Pens, Paint Box, Scale, A4 Sheets</li> <li>• For IT Lab sessions: Computer Lab with 1:1 PC : trainee ratio and having internet connection, MS Office / Open office, Browser, Outlook / Any other Email Client and chat tools.</li> <li>• Assessment and Test Tools for day to day online Tests and Assessments</li> <li>• For team discussions: Adequate seating arrangement in full / half circle format for one or more teams as per planned team composition.</li> <li>• Reading Resources: Access to relevant sample documents and learning forums to enable self-study before and after each training session.</li> </ul>
--	---

**Grand Total Course Duration: 400 Hours 0 Minutes**

#### Notes from IT-ITes Sector Skills Council NASSCOM

1. This document outlines the broad scope of coverage. This should be linked with OBF and training delivery plan. OBF (Outcome based framework) reflects the pedagogy used to ensure an expected outcome. Training delivery plan focuses on the sequence of delivery.
2. Though many NOSs have some seemingly common outcomes, notably core/generic, professional and technical skills, it is imperative to understand the contextual difference between them. For example, writing skills required to document program structure and code (in SSC/No506) are different from the writing skills required to prepare a time plan (in SSC/Ng001). Training providers are advised to,
  - a. Embed such skills development in the learning pedagogy for each expected outcome
  - b. Prepare a detailed session plan for training delivery with focus on sequence and duration of training
  - c. Run a diagnostic test to assess prior learning of students and help trainers / students identify the need for gap training, optimal duration and suitable training methodology. Accordingly, more introductory level sessions may

be included in guided or self-paced mode of learning. E.g. adding some sessions on Functional English or Use of Internet and MS Office.



**Trainer Prerequisites for Job role: "Junior Software Developer" mapped to Qualification Pack: "SSC/Qo5o8"**

Sr. No.	Area	Details
1	<b>Job Description</b>	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack SSC/Qo5o8.
2	<b>Personal Attributes</b>	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in this field.
3	<b>Minimum Educational Qualifications</b>	Minimum 12 <sup>th</sup> Standard; Preferred Master's degree in any discipline
4a	<b>Domain Certification</b>	2 years of work/training experience with respect to QP/Occupation 80% marks achieved in QP /NOS assessment (i.e. aggregate- 80% & per NOS - 70%) Additional certification in customer orientation, dealing with difficult customers, written communication etc. will be an added advantage.
4b	<b>Platform Certification</b>	80% marks achieved in Trainer QP (MEP/o1o2)/TVET/ pedagogy assessments (i.e. aggregate- 80% & per NOS - 70%)
5	<b>Experience</b>	Field experience: Minimum 2 years' experience in the same domain Training experience: 1 year preferred

**Annexure: Assessment Criteria**

<b>Assessment Criteria for Junior Software Developer</b>	
<b>Job Role</b>	<b>Junior Software Developer</b>
<b>Qualification Pack</b>	<b>SSC/Qo5o8</b>
<b>Sector Skill Council</b>	<b>IT-ITeS</b>

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack (QP) will be created by the Sector Skill Council (SSC). Each performance criteria (PC) will be assigned Theory and Skill/Practical marks proportional to its importance in NOS.
2	The assessment will be conducted online through assessment providers authorised by SSC.
3	Format of questions will include a variety of styles suitable to the PC being tested such as multiple choice questions, fill in the blanks, situational judgment test, simulation and programming test.
4	To pass a QP, a trainee should pass each individual NOS. Standard passing criteria for each NOS is 70%.
5	For latest details on the assessment criteria, please visit <a href="http://www.sscnasscom.com">www.sscnasscom.com</a> .

				Marks Allocated	
Assessment Outcomes	Assessment Criteria for Outcomes	Total Mark	Out of	Theory	Skills Practical
<b>1.SSC/No5o6 ( Assist in performing software construction and software testing entry-level tasks in the IT Services Industry)</b>	PC 1. Demonstrate basic computer and internet literacy including operating a computer, describing its major components and how they work, using Windows and Linux OS, operating a browser, searching the internet, managing mails and using social internet media.	<b>100</b>	10	0	10
	PC 2. Demonstrate aptitude for analysing information and making logical conclusions.		25	10	15
	PC 3. Demonstrate knowledge of the foundational mathematical concepts in computing.		20	5	15
	PC 4. Design algorithms to solve problems and convert them into code using the appropriate programming language constructs.		30	10	20
	PC 5. Read and execute a test case and record the outcome in the appropriate template.		10	5	5
	PC 6. Be able to communicate effectively with appropriate people w.r.t. assigned roles in simple English – both oral and written.		5	0	5
		<b>Total</b>	100	30	70
<b>3.NOS/N9o01 (Manage your work to meet requirements)</b>	PC1. Establish and agree your work requirements with appropriate people	<b>100</b>	6.25	0	6.25
	PC2. Keep your immediate work area clean and tidy		12.5	6.25	6.25
	PC3. Utilize your time effectively		12.5	6.25	6.25
	PC4. Use resources correctly and efficiently		18.75	6.25	12.5
	PC5. Treat confidential information correctly		6.25	0	6.25
	PC6. Work in line with your organization's policies and procedures		12.5	0	12.5
	PC7. Work within the limits of your job role		6.25	0	6.25
	PC8. Obtain guidance from appropriate people, where necessary		6.25	0	6.25
	PC9. Ensure your work meets the agreed requirements		18.75	6.25	12.5

		<b>Total</b>	<b>100</b>	<b>25</b>	<b>75</b>
<b>4.SSC/Ng002 (Work effectively with colleagues)</b>	PC1. Communicate with colleagues clearly, concisely and accurately	<b>100</b>	20	0	20
	PC2. Work with colleagues to integrate your work effectively with theirs		10	0	10
	PC3. Pass on essential information to colleagues in line with organizational requirements		10	10	0
	PC4. Work in ways that show respect for colleagues		20	0	20
	PC5. Carry out commitments you have made to colleagues		10	0	10
	PC6. Let colleagues know in good time if you cannot carry out your commitments, explaining the reasons		10	10	0
	PC7. Identify any problems you have working with colleagues and take the initiative to solve these problems		10	0	10
	PC8. Follow the organization's policies and procedures for working with colleagues		10	0	10
	<b>Total</b>	<b>100</b>	<b>20</b>	<b>80</b>	
<b>5.SSC/Ng003 (Maintain a healthy, safe and secure working environment)</b>	PC1. Comply with your organization's current health, safety and security policies and procedures	<b>100</b>	20	10	10
	PC2. Report any identified breaches in health, safety, and security policies and procedures to the designated person		10	0	10
	PC3. Identify and correct any hazards that you can deal with safely, competently and within the limits of your authority		20	10	10
	PC4. Report any hazards that you are not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected		10	0	10
	PC5. Follow your organization's emergency procedures promptly, calmly, and efficiently		20	10	10
	PC6. Identify and recommend opportunities for improving health, safety, and security to the designated person		10	0	10
	PC7. Complete any health and safety records legibly and accurately		10	0	10
	<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>	
<b>6.SSC/Ng004 (Provide data/information in standard formats)</b>	PC1. Establish and agree with appropriate people the data/information you need to provide, the formats in which you need to provide it, and when you need to provide it	<b>100</b>	12.5	12.5	0
	PC2. Obtain the data/information from reliable sources		12.5	0	12.5
	PC3. Check that the data/information is accurate, complete and up-to-date		12.5	6.25	6.25
	PC4. Obtain advice or guidance from appropriate people where there are problems with the data/information		6.25	0	6.25
	PC5. Carry out rule-based analysis of the data/information, if required		25	0	25
	PC6. Insert the data/information into the agreed formats		12.5	0	12.5

	PC7. Check the accuracy of your work, involving colleagues where required		6.25	0	6.25
	PC8. Report any unresolved anomalies in the data/information to appropriate people		6.25	6.25	0
	PC9. Provide complete, accurate and up-to-date data/information to the appropriate people in the required formats on time		6.25	0	6.25
		<b>Total</b>	<b>100</b>	<b>25</b>	<b>75</b>
<b>7.SSC/Ng005</b>	<b>PC1. Obtain advice and guidance from appropriate people to develop your knowledge, skills and competence</b>	<b>100</b>	10	0	10
	PC2. Identify accurately the knowledge and skills you need for your job role		10	0	10
	PC3. Identify accurately your current level of knowledge, skills and competence and any learning and development needs		20	10	10
	PC4. Agree with appropriate people a plan of learning and development activities to address your learning needs		10	0	10
	PC5. Undertake learning and development activities in line with your plan		20	10	10
	PC6. Apply your new knowledge and skills in the workplace, under supervision		10	0	10
	PC7. Obtain feedback from appropriate people on your knowledge and skills and how effectively you apply them		10	0	10
	PC8. Review your knowledge, skills and competence regularly and take appropriate action		10	0	10
			<b>Total</b>	<b>100</b>	<b>20</b>